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Apple® In Depth

A reference guide to apple products

Fall/Winter 1980

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The Federal Communications Commission has established new emission standards for computer devices that take effect January 1, 1981. Apple is taking steps to make its products compliant with those regulations. As a result of this—or of other factors—the specifications of certain products in this catalog may change without notice.

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The Seeds Of Success

The advent of a personal, affordable computer is one of those milestones of technology which mark the beginning of a new and better way to accomplish work and express creativity. Apple, acknowledged as a leader in personal computers, was the first company to make available to millions what was once available only to large organizations—computer power.

Founded in 1976, the company was the brainchild of two young engineers with big dreams and small resources. They made the prototype Apple computer in a garage, that now proverbial birthplace of many great ideas in California's Silicon Valley. This humble beginning—a nice but true touch to their success story—didn't detract from the technological sophistication of the computer they christened "Apple," a whimsical name as unusual as the product itself.

Acclaim By Innovation

Computer hobbyists were the first market of the fledgling company. Most were electronics engineers, targeted because they could easily recognize the high performance and overall quality of the new computer. And recognize it they did: demand for the unit soared, soon outstripping the production capabilities of the garage. Apple had arrived.

In 1977, the company revolutionized the personal computer market with the introduction of the Apple II, the first fully assembled computer of its kind. Unlike the "kits" offered by the competition, its performance did not depend upon the varying talents of its users to solder, wire, assemble components, and "debug" the finished product.

Additionally, the Apple II was the first fully programmable computer of its size. It brought many of the capabilities of large data processing systems into the everyday lives of individuals, at a cost and convenience not previously possible. Acceptance of the Apple II rapidly spread from hobbyists to business managers and other professionals.

Apple *III*, the newest in the company's line of personal computers, was designed to provide these professionals—managers, engineers, financial analysts, accountants—with the most powerful, affordable, and versatile desktop computer on the market today. Equipped with twice the memory available on other personal computers, Apple *III* can perform sophisticated tasks to solve complex problems faster and more economically than ever before.

Today, Apple Computer Systems are used in small businesses and large corporations; in elementary and secondary schools; in college classrooms; in science and engineering laboratories; and in homes throughout the world. By any standard—price/performance, dependability, enhanceability, service, software support, ease of understanding and operation—Apples are the preferred personal computers.

Service And Support

The company's commitment to quality is reflected not only in its products, but in its outstanding service and user support as well. There are more than 800 authorized Apple Service Centers worldwide: the largest personal computer maintenance network in existence. There's a hotline to Apple Headquarters in Cupertino, California, where applications experts stand by to provide assistance by telephone when needed. And—because excellence is designed into every product—Apple is able to back its computer systems with the lowest-priced Extended Warranty package in the industry. This total support, unique in the personal computer field, is another reason why Apple computers are the best personal computers available.

Documentation

A philosophy of excellence is also demonstrated in the company's comprehensive documentation. As the design of its computers indicates. Apple understands the challenge and utility of simplicity. Its equipment and program manuals contain easy to follow exercises and clear, detailed explanations of procedures. Apple's objective is to educate and build user confidence and familiarity so that its products can be put to work quickly.

Apple's Future

According to Business Week Magazine*, "Of all the companies that owe their existence to the hobby computer phenomena, only Apple has emerged so far with the strength to become a significant factor in the small-computer markets of the 1980s."

The company's dedication to quality is the basis of this strength and the most effective way it can continue its remarkable growth. Through its advanced research and development activities and commitment to product excellence, Apple is determined to expand its position as the preferred personal computer manufacturer. It is well on its way.

*Surviving the Microcomputer Shift, April-16, 1979

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The Apple II and II Plus Personal Computer Systems

The Most Popular Personal Computers In Their Class

Apple II and II Plus computers have been specifically designed to make your working time more productive, your learning time more exciting, and your leisure time more entertaining and creative. Whether you use your Apple II or II Plus in your office, your classroom, your laboratory or your home, you'll be impressed with its powerful capabilities and ease of operation.

Special Solutions For Special Needs
With either system, you'll discover that a variety of applications are just a few keystrokes away. For example, you can...

- *write, revise, edit and print reports, letters, term papers and other documents quickly and easily...*
- *establish, maintain and update a general ledger, accounts receivable and payable records for a small business, eliminating hours of paperwork...*
- *control and monitor a shop's inventory automatically, reducing losses and increasing profits...*
- *teach computer science, including languages such as Pascal, BASIC and more, while eliminating the problems associated with timesharing systems...*
- *introduce young children to computers with exciting and instructive quizzes, drills and games, better preparing them for the future in this high technology age...*
- *solve scientific calculations in a minimum amount of time and store those calculations for future use, saving countless hours of repetitive work...*
- *create and update a personal investment portfolio, maintaining transaction records on stocks, bonds and other financial assets...*
- *access the Dow Jones News/Retrieval Service to obtain selected business news—from 90 seconds to 90 days ago—day or night...*
- *write computer programs tailored specifically to your needs, even if you have no programming experience.*

Apple Makes It Easy
To help meet your specific needs, Apple and many other companies offer a wide variety of programs for use with your Apple II or II Plus system. Programs from the Apple Software Bank are packaged with detailed reference manuals which will teach you, step-by-step, how to use each program. Simply read through each manual, following the instructions and completing all the exercises. Your hands-on experience makes it easy to become an expert.

Discover The World Of Programming
If you can't find a suitable program for your needs, or if you simply want to explore and master today's newest technology, you can free your creative spirit and write your own computer programs—even if you've never written one before. Programming is exciting and easy with the Apple Computer System. The only requirement is that you "talk" to the computer in a language it understands. A BASIC language is built into each Apple Computer System: Applesoft Floating-Point BASIC in the Apple II Plus, and Integer BASIC in the Apple II. You'll receive the appropriate programming manual when you purchase your system. Your manual will lead you through the Applesoft or Integer BASIC programming steps, defining and explaining your Apple's simple "vocabulary." After you have read the manual and performed the exercises, you'll be ready to program. It's easy with Apple!

After you have written a program, you can save it for future use simply by storing it on a floppy diskette. Your program is ready to use again and again.

Apple Offers Even More
In addition to extensive software and ease of programmability, Apple also...

- allows you to expand your system as your needs grow, because of its modular method of adding memory and accessories...
- prompts you for input, warns you of errors, and lets you explore music and speech applications with its sound capability...
- heightens your interest with its color graphics capability...
- offers safety and durability, because it is UL-approved as a unit and housed in a rugged, molded case...
- travels with you, because it is lightweight and portable...
- assures you of low service costs, because its components are easily accessible and socket-mounted for quick replacement...
- offers you exceptional reliability, because of its built-in engineering excellence.

Standard Features
Apple II and II Plus Personal Computer Systems provide these standard features:

- a built-in BASIC language (Integer BASIC in the Apple II, Applesoft BASIC in the Apple II Plus);
- built-in disassembler;
- a ROM-based system control program;
- color graphics and sound capabilities;
- sockets for up to 48K bytes of user memory (RAM); 64K with the plug-in Language System;
- cassette interface;
- game input/output connector, and two hand controls for games and other human-input applications;
- typewriter-style ASCII keyboard;
- high-efficiency switching power supply;
- eight accessory expansion slots.

Additionally, Apple II computers have a single-pass assembler, simulated single-step and trace modes, and breakpoint handling.

Apple II Plus computers feature automatic start-up in BASIC, and optional automatic execution of any disk program on start-up.

Technical Specifications
Video Display:
Through software selection, an Apple displays text and high-resolution graphics and, when connected to a color monitor or television, color graphics. Its graphics commands allow either of two screen "pages" to be displayed, with four lines of text below the display area.

- Text Mode
  - —40 characters/line, 24 lines
  - —5x7 dot matrix, upper-case characters
  - —normal, inverse or flashing characters
  - —extensive display control software in ROM
  - —full cursor control—protected screen feature
  - —fast display—1000 cps
- Color Graphics Mode
  - —40hx48v resolution (40hx40v with four lines text)
  - —15 colors
- High Resolution Graphics Mode
  - —280hx192v black/white resolution (or 280hx160v with four lines text)
  - —six colors: black, white, violet, green, blue, orange (color resolution is 140hx192v or 160v)

Memory:

- User Memory (RAM)
  - —organized in 16K-byte increments
  - —easily expanded by inserting memory elements into plug-in sockets
  - —up to 48K RAM can be installed without requiring expansion chassis
  - —an additional 16K RAM can be installed through use of the Language System (a plug-in card), for a total of 64K RAM
- Language Memory (ROM)
  - —up to 12K of Language Memory, organized in six blocks of 2K bytes each; 2K used for System Control

System Control:

- disassembler;
- automatic input/output device assignment;
- keyboard and screen editing features;
- register examine/modify and read/write cassette routine;
- hex add/subtract for relative branch calculations.

Inputs And Outputs:

- typewriter-style ASCII keyboard;
- cassette interface—1500 bps;
- eight peripheral board connectors, fully buffered, with interrupt and DMA priority structure;
- game I/O: four analog-to-digital inputs, three TTL inputs and four TTL outputs.

Physical Dimensions (Nominal):
Weight: 5kg (11 pounds)
Height: 11.4 cm (4½ in)
Depth: 45.7 cm (18 in)
Width: 39.4 cm (15½ in)

The Apple II Package
Order Nos.

U.S.	European	
A2S0016	A2S0016P	(16K Bytes RAM)
A2S0032	A2S0032P	(32K Bytes RAM)
A2S0048	A2S0048P	(48K Bytes RAM)

With your order for any Apple II System, you will receive:

- Apple II, with memory as ordered, and features as specified in STANDARD FEATURES section above;
- Two (2) hand controls (game paddles);
- AC power cord;
- Cassette cable;
- Apple II Reference Manual;
- Apple II BASIC Programming Manual.

The Apple II Plus Package
Order Nos.

U.S.	European	
A2S1016	A2S1016P	(16K Bytes RAM)
A2S1032	A2S1032P	(32K Bytes RAM)
A2S1048	A2S1048P	(48K Bytes RAM)

With your order for any Apple II Plus system, you will receive:

- Apple II Plus, with memory as ordered, and features as specified in STANDARD FEATURES section above;
- Two (2) hand controls (game paddles);
- AC power cord;
- Cassette cable;
- Apple II Reference Manual;
- Applesoft BASIC Reference Manual;
- Applesoft Tutorial Manual.

The Apple *III* Personal Computer System

The Most Powerful Professional Computer System In Its Class

The Apple III is a powerful, desktop computer system available as part of custom-tailored packages designed to solve your complex application needs. For managers, financial planners, analysts, and others who need to organize facts and figures, there's the Apple III Information Analyst System. It offers special features that make it the most powerful, easy to use timesaver available. For administrators and professionals who need a powerful, word processing capability, there's the Apple III Word Processor. It offers state-of-the-art capabilities that rival those of systems selling for $10,000 and more. Other Apple III system configurations can be tailored to meet your specific needs.

Powerful Solutions For Complex Applications

The Apple III Computer System has been designed to tackle the tasks that keep you from being as productive as you'd like to be. With an Apple III, you can...

- *plan budgets, compare actuals with forecasts, and modify projections...*
- *calculate rate-of-return, pro formas, and financial statements...*
- *develop highly accurate forecasting models and pricing strategies...*
- *create scientific and engineering models and study causes, effects, and trade-offs...*
- *compose, revise, and print all kinds of documents—from memos and brochures to form letters and book-length manuscripts—quickly and easily...*
- *maintain and update comprehensive mailing lists, sort them by name, zip code, or special key, and selectively print mailing labels...*
- *write complex computer programs in a variety of languages, including Apple Business BASIC, and Pascal.*

Professional Features For Professional Needs

In addition to its outstanding applications software, the Apple *III* offers a powerful operating system and all the hardware features professionals look for.

Apple *III*'s Sophisticated Operating System (SOS)

Designed to control all of the Apple *III*'s hardware for you, SOS updates and reads the time and date from the system clock, handles interrupts, manages the system's memory and peripherals, provides the foundation for graphics, and performs comprehensive file management.

Apple *III*'s Keyboard

The typewriter-style, Apple *III* keyboard has been sculptured for maximum typing speed and accuracy. It contains 61 alpha keys and a separate, 13-key numeric pad.

Four, dedicated cursor control keys provide single-keystroke cursor movement; each key also fast repeats when held down, so that you can move quickly from point to point in the text. The alpha-lock key shifts only the alphabetic keys into upper case, leaving the number row unaltered. To speed numeric data entry, the layout of the numeric keypad is identical to that of a standard calculator.

Apple *III*'s Disk Drive

A built-in, 140K byte, flexible disk drive makes the Apple *III* a compact, space-saving unit. System expansion is cost effective, too, because you can add up to three external disk drives without the need for additional control hardware or software.

Apple *III*'s Back Panel

The system's back panel (as well as most of its case) is formed of diecast aluminum. The aluminum fins on the back of the unit keep the system cool and eliminate the need for a fan.

Most peripheral devices plug directly into the Apple *III*'s back panel connectors. Additionally, there are four, large slots in the back panel for input/output connectors mounted on optional peripheral cards.

As many as three expansion floppy disk drives can be used with the Apple *III*. The first additional drive plugs into the "floppy disk" connector on the system's back panel; then, in "daisy-chain" fashion, the second drive plugs into the first, and the third plugs into the second.

Back panel connectors are also provided for two Apple *III* "joysticks." Application programs can be designed to take advantage of a joystick (for example, to move the cursor around the screen, or to point to displayed items). Additionally, one of the joystick connectors can alternately be used to connect a Silentype thermal printer to the Apple *III*.

Apple *III*'s Input/Output Connections

The Apple *III* allows you to use a wide variety of video display devices. The high resolution, black-and-white, Apple *III* Monitor connects to the system by high-frequency cable, which plugs into a jack on the Apple *III*'s back panel. Color video monitors—including NTSC (standard) color, and RGB (for exceptional color purity and resolution) attach to the Apple *III* by means of a 15-pin connector that provides all the power and signals necessary.

Built into the Apple *III* is a two-inch speaker, which produces sound of such high quality that it can even be used to generate voice. An audio output jack located on the back panel of the Apple *III* also allows for connection of a separate earphone or external speaker; plugging into this jack silences the Apple *III*'s built-in speaker.

An RS-232C connector, also located on the Apple *III*'s back panel, provides for direct attachment of many types of "serial" input/output devices. For example, your Apple *III* can "call" other computers and data banks by phone line, using a modem. Or you can quickly add a variety of high-speed or letter-quality printers—even other terminals or computers—to your system, simply by plugging them into the RS-232C connector.

Inside the Apple *III*

Removing the top cover reveals the peripheral card expansion section of the Apple *III*. Up to four different peripheral cards can be used at one time to supplement the Apple *III*'s built-in peripheral interfaces.

For optimal computing speed, the Apple *III*'s CPU can be "interrupted" by your system's peripheral devices whenever they require CPU control. Alternately, the CPU can also poll the devices to determine which need attention—thereby minimizing the software required for peripheral control.

The Apple *III* also contains many features that enhance its utility—including an extremely useful, built-in clock/calendar with its own long-life batteries. Once set, the clock/calendar maintains the correct time and date, whether the system is turned on or off.

Also built into the Apple *III* are a number of powerful text, graphics, and color capabilities. In all text modes, for instance, the character set that appears on your monitor can be chosen from several available fonts. Special characters, graphics symbols, and even foreign language character sets can be selected quickly and easily from a diskette, and used by any program on the computer.

Through the Apple *III*'s professional display, you view 80 characters by 24 lines of black and white characters. The system can also display 40 characters by 24 lines of color text, on color background, to add dramatic emphasis to programs.

Along with various text modes, several graphic modes are also available with the Apple *III*, including an ultra-high resolution, black-and-white mode. Up to 16 different colors are available in the high resolution color mode, and even higher resolution color can be generated by restricting color changes slightly. On a black and white monitor, color is displayed as 16 different shades of grey, making it easy for you to use shading and high lighting to enhance and emphasize your displays.

The Apple *III* also has an Apple II emulation mode for those users who already have an investment in Apple II software. This mode enables you to run most Integer BASIC and Applesoft programs on your Apple *III*. (Minor modifications are required for Apple II programs which use the game paddles, however.) Because the Apple *III* in emulation mode behaves exactly like an Apple II or Apple II Plus, the screen will display 40-character by 24-line text.

Technical Specifications

Physical Dimensions:
Height: 12.20 cm (4.8 in)
Depth: 46.22 cm (18.2 in)
Width: 44.45 cm (17.5 in)
Weight: 26 pounds (11.8 kg)
Cast aluminum base with molded plastic.

Processor:
Apple-designed processor utilizes 6502A as one of its major components. Other circuitry provides extended addressing capability, relocatable stack, zero page, and memory mapping.

Emulation Mode:
Provides hardware emulation of 48K byte Apple II or Apple II Plus. Allows most Apple II programs to run without modification.

Clock Speed:
1.8 MHz with video off, 1.4 MHz average;
1.0 MHz in emulation mode.

Main Memory:
96K (98,304) eight-bit bytes, minimum;
128K (131,072) bytes, maximum; dynamic RAM memory.
ROM Memory:
4K (4,096) bytes used for self-test diagnostics.
Power Supply:
High-voltage switching type
+5, −5, +12, −12 volts
Mass Storage:
One 5.25 inch floppy disk drive built-in;
140K (143,360) bytes per diskette.
Up to three additional drives can be connected by daisy-chain cable (560K bytes on-line storage).
Keyboard:
74 keys (61 on main keyboard, 13 on numeric pad);
Full 128-character, ASCII encoded;
All keys have automatic repeat;
Three special keys: SHIFT, CONTROL, ALPHA LOCK;
Two user-definable "Apple" keys;
Four directional arrow keys with two-speed repeat;
Four other special keys: TAB, ESCAPE, RETURN, ENTER.
Screen:
Three upper/lower case text modes:
80 column, 24 line, black-and-white;
40 column, 24 line, 16 color foreground and background;
40 column, 24 line, black-and-white;
All text modes have a software-definable, 128-character set (includes upper and lower case) with normal or inverse display.
Three graphics modes:
280x192, 16 colors (with some limitations);
140x192, 16 colors;
560x192, black-and-white; plus Apple II Modes.
Video Output:
RCA phono connector for NTSC black-and-white composite video;
DB-15 type connector for:
NTSC black-and-white composite video;
Four TTL outputs for generating RGB color;
Composite sync signal;
NTSC color composite video;
+5, −5, +12, −12 volt power supplies;
Color signals appear as 16-level grey scale on black-and-white video outputs.

Audio Output:
Built-in two-inch speaker;
Miniature phone-tip jack on back panel;
Driven by six-bit digital/analog converter or fixed-frequency "beep" generator.
Serial I/O:
RS-232C compatible, DB-25 female connector;
Software selectable baud rate and duplex mode.
Joysticks:
Two DB-9 connectors for two joysticks with pushbuttons.
Printer:
One DB-9 connector (shared with second joystick) for Apple Silentype printer.
Clock:
Can be set and read from programs;
Powered by long-life, replaceable, watch batteries;
Keeps track of month, date, day of week, and exact time to 1/1000th of a second.
Expansion:
Four, 50-pin expansion slots inside the cabinet.
SOS:
Sophisticated Operating System handles all system I/O;
SOS can be configured to handle standard or custom I/O devices and peripherals by adding or deleting "device drivers."
All languages and application programs access data through the SOS file system.
Languages:
Apple Business BASIC and Pascal.

The Apple *III* Package
Apple *III* Information Analyst:
Order No. A3P0001 (Option A)
Order No. A3P0002 (Option B)
Order No. A3P0003 (Option C)
Apple *III* Word Processor:
Order No. A3P0004 (Option A)
Order No. A3P0005 (Option B)
With your order for any Apple *III* configuration, you will receive:
- Apple *III* Professional Computer System with built-in disk drive, keyboard, clock/calendar, serial (RS-232C) and Silentype printer interfaces, and either 96K bytes RAM (Information Analyst, 128K bytes optional) or 128K bytes RAM (Word Processor);
- Apple's Sophisticated Operating System (SOS) package, with:
  —System Owner's Guide;
  —DOS 3.3 diskettes;
  —DOS 3.3 instruction manual;
  —Standard Drivers Manual.
- Apple's Business BASIC programming software package, with:
  —Business BASIC diskettes;
  —Instruction manual.

Plus the following (based on the configuration ordered):

Apple III Information Analyst
In addition to the basic hardware and software, with your Apple *III* Information Analyst order you will also receive:
- VisiCalc™ *III* software package, with:
  —VisiCalc *III* diskette;
  —VisiCalc *III* manual;
  —Toolkit sampler diskette (with prewritten VisiCalc III worksheets to help you get started);
  —Toolkit sampler manual.
- Apple *III* Monitor (black & white);
- Second disk drive (Disk II for Apple *III*—with options B and C);
- Apple Silentype thermal printer (with option C);
- All necessary cabling, accessories, and blank diskettes to put your system to work immediately.

Apple III Word Processor
In addition to the basic Apple *III* hardware and software, with your Apple *III* Word Processor order you will also receive:
- Word Painter software package, with:
  —Word Painter diskettes;
  —Word Painter instruction manual;
  —Word Painter keycap set and keycap installation tool.
- Mail List Manager software package, with:
  —Mail List Manager diskettes;
  —Instruction manual.
- Second disk drive (Disk II for Apple *III*);
- Apple *III* Monitor (black & white);
- Apple Silentype thermal printer (Option A); or
- Qume Sprint 5 daisy-wheel printer (Option B);
- All necessary cabling, accessories, and blank diskettes to put your system to work immediately.

The Apple *III* Word Processor

A System Beyond Words

Available second quarter 1981

The Apple III Word Processor is a sophisticated personal computer system designed especially for word processing. Its Word Painter software allows you to create and edit letters, memos, reports, manuals – even books – quickly and easily. And its Mail List Manager software helps you communicate more effectively with customers and business associates by making it easy to create, store, update, and print mailing labels, and address and phone lists. The 80-character/line, upper/lower case display gives you an accurate picture of what your text will look like when it's printed, while the system's sculptured keyboard makes the transition from a typewriter smooth and simple.

Reliable, powerful, and reasonably priced, the Apple III Word Processor will help you streamline clerical operations and improve productivity from the minute you turn it on.

Benefits

The Apple *III* Word Processor...
- *simplifies document formatting, because its large 80-character/line by 24-line display gives you an accurate picture of what your printed documents will look like...*
- *minimizes training by providing a natural transition from the standard typewriter...*
- *increases your efficiency, because of its convenient, built-in disk drive...*
- *maximizes your word processing productivity, because of its powerful Word Painter software...*
- *reduces expansion costs, because up to three external disk drives can be added without additional control hardware or changes in software...*
- *makes data retrieval easier, because its built-in clock calendar automatically identifies disk files with the correct date and time of their creation or last revision...*
- *saves you money, because its cost-effective Mail List Manager program lets you inexpensively create, sort, update, and print mailing labels and phone lists...*
- *increases system flexibility, because of its compatibility with a variety of draft- and letter-quality printers.*

The Apple *III* Word Processor—A Closer Look

Tools are as useful as they're usable—and the Apple *III* Word Processor is the first personal computer human-engineered for word processing. The sculptured, typewriter-style keyboard is a model of utility and convenience, with a familiar layout and some special features that allow you to move almost effortlessly from point to point in the text.

At the heart of the Apple *III* Word Processor is Word Painter, Apple's powerful word processing software. With Word Painter, you can perform normally time-consuming operations—such as centering, indenting paragraphs, searching for and replacing text—quickly and automatically.

To preserve your documents, the Apple *III* Word Processor incorporates a number of convenient, built-in features, including a floppy disk drive. This highly reliable disk drive lets you store—and quickly retrieve—up to 140K bytes of data per diskette. And as your needs expand, you can "daisy-chain" up to three additional, external drives to your system, without adding any control hardware or software.

Another truly convenient feature of the Apple *III* Word Processor is its built-in clock/calendar, which automatically date/time stamps files,

records when a letter is written, and notes (per your instruction) whether a particular draft is the final one. The clock/calendar has its own long-life batteries, so the system stays on time, even when it's unplugged.

When your documents are ready for printing, the Apple /// Word Processor makes your job simple, and ensures that the results are letter-perfect. For draft-quality printing, Apple's Silentype thermal printer is quiet, reliable, and cost-efficient—and plugs directly into the Apple ///. For letter-quality printing, you can choose from a number of different printers—including Apple's popular daisywheel model (Qume Sprint 5). Because many printers offer a variety of type fonts, you can tailor your documents quickly and easily for the "look" you want.

The Apple /// Word Processor—the affordable answer to your word processing needs.

Technical Specifications

Keyboard:
Textured, non-glare, non-slip keytops, with raised dots on "D" and "K" keys for quick positioning; Alpha Lock shifts and locks alphabetic characters only, leaving all other keys unaffected.

Display:
12", high-resolution, video monitor, with up to 24 lines of 80 characters/spaces per line, upper/lower case, and high resolution graphics capability.

Storage:
Approximately 60 pages of text per diskette; system supports up to four daisy-chained disk drives (including the Apple ///'s built-in unit), for a total of 560K bytes.

Applications Software:
Word Painter, written in UCSD Pascal™ and Apple /// assembly language; Mail List Manager, written in UCSD Pascal.

The Apple /// Word Processor Package
Order No. A3P0004 (Option A)

Order No. A3P0005 (Option B)

With your Apple /// Word Processor order, you will receive:
- The Apple /// Professional Computer System, with built-in disk drive, keyboard, clock/calendar, serial (RS-232) and Silentype thermal printer interfaces, and 128K bytes RAM;
- Apple's Sophisticated Operating System (SOS) package, with:
  —System owner's guide;
  —System utilities diskette;
  —Standard drivers manual;
- Word Painter software package, with:
  —Word Painter diskettes;
  —Word Painter instruction manual;
  —Word Painter keycap set and keycap installation tool;
- Apple's Business BASIC programming software package, with:
  —Business BASIC diskettes;
  —Instruction manual;
- Mail List Manager software package, with:
  —Mail List Manager diskettes;
  —Instruction manual.
- Second disk drive (Disk II for Apple ///);
- Apple /// Monitor (black & white);
- Apple Silentype thermal printer **(Option A)**; or
- Qume Sprint 5 daisy-wheel printer **(Option B)**;
- All necessary cabling, accessories, and blank diskettes to put your system to work immediately.

The Apple /// Information Analyst

More Than A Worksaver

The Apple III Information Analyst is a highly integrated, personal computer system designed especially for professionals who work with facts and figures. It is built around the power and flexibility of the Apple III computer, with its big, 12-inch (diagonal) video monitor, 80 character, upper/lower case display, and high-resolution, color graphics capabilities. Other important features include a calculator-style, numeric keypad, built-in disk drive and clock/calendar, and integrated system interfaces for quick, inexpensive expansion when your needs require it.

The Apple III Information Analyst comes complete with two versatile software packages: Apple Business BASIC, and VisiCalc™ III. Apple Business BASIC – Apple's advanced, multifeatured version of the popular BASIC language – handles complex business, scientific, and engineering programming with speed and precision. VisiCalc III, the "electronic worksheet," lets you solve any problem that can be organized into rows and columns quickly and accurately.

More than a worksaver, the Apple III Information Analyst gives you the competitive edge you need to excel as a professional in budgeting, forecasting, scheduling, accounting, and other critical business and program management areas.

Benefits

The Apple /// Information Analyst...
- *increases your productivity by providing a variety of features and programs that dramatically reduce the amount of time required to perform routine tasks...*
- *reduces your programming time, because its feature-packed Apple Business BASIC language lets you write long, complex programs with maximum efficiency...*
- *extends your decision-making capabilities, because its VisiCalc III software lets you ask "What if...?" questions, and instantly calculate the results of different approaches to planning and modeling problems...*
- *increases the value of your time, because its powerful, problem-solving and worksaving benefits give you marketable advantages over competitors.*

The Apple /// Information Analyst—A Closer Look

The Apple /// Information Analyst is designed for the professional manager who can't afford to waste time—or make mistakes on important decisions. Human-engineered for ease-of-use, the Information Analyst's handy, integrated keypad lets you quickly enter large blocks of figures and data. And the sculptured, typewriter-style Apple /// keyboard incorporates several editing and cursor movement feaures that make it easier to enter text and write programs.

The real strength of the Apple /// Information Analyst lies in its powerful software. You can use Apple Business BASIC to write programs tailored to your needs. And you can use VisiCalc /// to prepare marketing forecasts, budgets, pricing strategies, and more.

To preserve your data, the Apple /// Information Analyst incorporates a number of convenient, built-in features, including a disk drive. Highly reliable, it lets you store and quickly retrieve up to 140K bytes of data per diskette. And as your needs expand, you can daisy-chain up to three additional, external drives to your system, without adding any control hardware or software.

Another handy, built-in feature of the Apple /// Information Analyst is its clock calendar, which conveniently date stamps your files—

VisiCalc is a trademark of Personal Software, Inc.

thereby providing an especially useful way to distinguish among revisions. Also, programs with calculations that incorporate the current date or time (interest calculations, for example) can be designed to access the system directly for the data, instead of requiring an operator input. The clock/calendar has its own long-life batteries, so the system stays on time, even when it's unplugged.

When you're ready to print your forecasts, budgets, schedules, mailing labels, and other documents, the Apple *III* Information Analyst performs with letter-perfect results. One of its built-in printer ports lets you simply plug in and print with Apple's quiet, reliable Silentype thermal printer. And another built-in printer port lets you easily connect your Apple *III* Information Analyst to a wide variety of high-speed printers.

Whether you're an engineer modeling with computer simulations, or a marketing manager preparing five-year sales forecasts, the Apple *III* Information Analyst can save you time, improve your results, and polish your professional image.

Technical Specifications

Keyboard/Keypad:
Textured, non-glare, non-slip keytops, with raised dots on "D," "K," and "5" keys for quick positioning; separate numeric keypad for calculator-style numeric entry.

Display:
12", high-resolution, video monitor, with up to 24 lines of 80 characters/spaces, and upper/lower case; color and high-resolution graphics capabilities for plotting, graphs, and other applications.

Storage:
System supports up to four, daisy-chained disk drives (including the Apple *III*'s built-in unit), for a total of 560K bytes.

Applications Software:
Apple Business BASIC and VisiCalc *III*, written in Apple *III* assembly language.

The Apple *III* Information Analyst Package

Order No. A3P0001 (Option A)

Order No. A3P0002 (Option B)

Order No. A3P0003 (Option C)

With your Apple *III* Information Analyst order, you will receive:

Option A

- Apple *III* Professional Computer System, with built-in disk drive, keyboard and numeric keypad, clock/calendar, serial (RS-232) and Silentype printer interfaces, and 96K bytes RAM (128K bytes optional);
- Apple's Sophisticated Operating System (SOS) package, with:
  - —System Owner's Guide;
  - —System utilities diskette;
  - —Standard Drivers Manual;
  - —DOS 3.3 diskettes;
  - —DOS 3.3 instruction manual.
- Apple Business BASIC programming software package, with:
  - —Business BASIC diskettes;
  - —Instruction manual.
- VisiCalc *III* software package, with:
  - —VisiCalc *III* diskette;
  - —VisiCalc *III* manual;
  - —Toolkit sampler diskette (prewritten VisiCalc *III* worksheets to help you get started);
  - —Toolkit sampler manual.
- Apple *III* Monitor (black & white);
- All necessary cabling, accessories, and blank diskettes to put your system to work immediately.

Option B
Same as Option A, plus:
- Second disk drive (Disk II for Apple *III*).

Option C
Same as Option A, plus:
- Second disk drive (Disk II for Apple *III*);
- Apple Silentype thermal printer.

The Controller

Revision 1.1
Small Business Management and Accounting

The Controller is a comprehensive accounting system that enables the small business owner to manage his business more effectively. Not only does the system allow better planning of payments and faster cash collection, it also generates timely reports which allow the owner to act quickly, if necessary, on items affecting the financial health of the business. And, through Revision 1.1, The Controller offers improved processing speed (approximately 25%) over the previous version, and compatibility with the user's choice of several printers.

Consisting of three modules—Accounts Receivable, Accounts Payable, and General Ledger—The Controller also offers an easy, effective alternative to manual bookkeeping. It's flexible as well: the Accounts Payable and Receivable systems may be used either independently or in conjunction with the General Ledger.

Discover the easier way to more effective cash and accounting management—put the Controller to work in your business.

Benefits

The Apple Controller...

- *allows you to easily trace any transaction because it automatically prints audit trails...*
- *warns you of data entry errors and prompts you for further instructions through audio feedback ("beeps")...*
- *identifies and monitors slow paying customers through its account aging feature...*
- *assists you in planning cash needs for expenditures, and allows you to take advantage of discounts and "net" terms, because it tracks accounts payable by due date...*
- *shortens bookkeeping time required to maintain accurate records, because it automatically posts and updates...*
- *reduces bookkeeping errors by eliminating redundant writing, calculating and typing, and automatically printing management summaries, detailed reports, vendor and customer lists, mailing labels, account statements, and archival copies of each month's data for historical records...*
- *assists in maintaining complete, accurate and consistent records, because it encourages the use of standard bookkeeping practices...*
- *reduces the time required to process your accounts and makes information available to you when you need it through the power of your Apple Computer...*
- *protects you from losing important business information by automatically making a back-up copy of all operational data after posting.*

The Controller—A Closer Look

To assist you in determining if The Controller is appropriate for your accounting needs, this section describes each system module by its menu, including numeric and financial limits. If your business fits within these limits, The Controller is probably just the package for you.

The Accounts Receivable, Accounts Payable and General Ledger menus include three common options. The first of these is *Customizing Features,* a program which allows you to configure the system to your business needs, for example, whether finance charges should be calculated and at what percentage rate. The second is *Utilities,* a set of computer programs that enable you to make back-up copies of your diskettes; restore diskettes that have been damaged in some way; and determine how many entries you have made and the amount of diskette space remaining. *Change Today's Date* allows you to change the date each time you use the selected module.

Accounts Receivable (A/R) System Module

After selecting "Accounts Receivable" from the Controller's main menu, your screen will display the Accounts Receivable menu.

Customer Master allows you to establish and maintain an up-to-date listing of your customers. You may store data for up to 250 customers on each diskette (to a recommended maximum of three diskettes, or 750 customers).

Sales Entries enables you to enter your sales by batch (up to a maximum of 100 per batch at any one time), and print reports for proofing. Sales adjustments can also be entered at this time.

Payment Entries permits you to record payments made by your customers. Payments may be entered in batches (up to a maximum of 100 entries per batch at any one time). As with Sales Entries, adjustments can also be entered at this time.

As you post, both the Sales and Payment Entries are put into summarized forms, so that they may be later transferred automatically to the General Ledger should you choose to do so. One hundred Transfer Journal Entries, may be made at any one time from the A/R program to the General Ledger.

Aged Trial Balance keeps track of outstanding balances, appropriately distributing them among four aging periods: current, 31–60 days, 61–90 days, and over 90 days. It also prints three different reports. The first is a Summary Report, showing customer information, account balance by aging periods, and the total amount due. The second, Detail Report, includes the same information as the Summary Report, as well as the balance forward for the month and current monthly transactions. The Monthly Activity Report details the business's total activity for the month by transaction, including sales, taxes and other amount categories. For audit purposes, the Detail Report must be printed before you can close the month.

Finance Charges is an optional feature which automatically computes, on a monthly basis, the finance charge percentages against your customers' balances. You are prevented from running Finance Charges more than once a month, and before you have posted Sales and Payment entries.

With the Accounts Receivable module, the total of finance charges, sales, or payment entries should not exceed 750 per diskette per month.

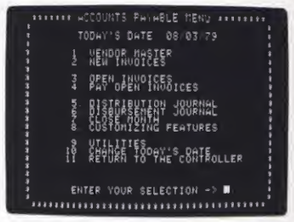
Statements generates computer-printed customer account statements. You may print up to 250 per month; the largest single balance for any one customer per aging period is $90,000.00.

Sales Commissions prints a report by salesman number detailing the amounts a business owes its commissioned salespeople, based on their individual sales for the month.

Close Month initiates the procedure that ends the monthly business cycle for billing. It eliminates all detailed transactions from Accounts Receivable and transfers the totals to the balance forward amount for the next month. Outstanding Accounts Receivable are aged automatically by one month.

Accounts Payable (A/P) System Module

After selecting "Accounts Payable" from the Controller's main menu, your screen will display the Accounts Payable menu.



Vendor Master allows you to create a master file of all vendors with whom you do business. The vendors may be temporary or permanent, and you may have up to 125 vendors at one time. You can add, change, examine and remove vendors from the master file, and print a Vendor Master report and vendor labels at any time.

New Invoices enables you to enter data for up to 300 invoices with distribution to twelve General Ledger accounts. The number of available invoice records is decreased for distributions more than three in number. For example, if an invoice is distributed to nine accounts, the computer will subtract three invoice records from the total available. Processing options for New Invoices include adding, changing, displaying, and removing entries. Each invoice will be assigned a "voucher number" and you can print a proof report at any time to double-check the data before posting.

Pay Open Invoices directs the computer to print as many as 3000 checks in any one month for all invoices with a due date less than or equal to the date you enter as Check Date. It also prints a Paid Invoices Register to keep track of all checks printed and posted. Up to 300 open invoices may be in the A/P system at any time. If you have chosen not to use your Apple to print checks, this selection can still be used to post the handwritten checks.

Distribution Journal allows you to post account distributions, print a report of all invoices by the respective accounts, and create all of the entries that will be transferred to the General Ledger. Up to 100 Transfer Journal Entries may be made to the General Ledger system at any one time. You will be required to post at least once before you close the month.

Disbursement Journal is a printed report that details what checks have been written, to whom, the check date/number/amount, and any discount received. The three accounts affected by the process are: Accounts Payable and Cash in Bank, which are reduced, and Vendor Discounts Taken, which increases (if a discount for prompt payment was offered).

Close Month is the process that ends each monthly business cycle. Before you are allowed to close the month, the system will check to be sure that certain processing functions have taken place, and that the corresponding reports have been printed. The system will also require you to make back-up copies of your data diskettes before and after closing the month.

General Ledger (G/L) System Module

After selecting "General Ledger" from the Controller's main menu, your screen will display the General Ledger menu.

Chart of Accounts permits you to add, change, and remove accounts, as well as to print and display them on your screen. The General Ledger system can handle up to 250 accounts, with a maximum recommended balance of $90,000,000.00 per account.

Standard Entries is reserved for those same amounts posted to the same accounts each month, such as rent. Once these are established, you need only post them as a batch once each month, eliminating the need to retype individual entries every time. You can add, change, remove, print, and post the standard entries.

Journal Entries is used to make and adjust entries to the General Ledger. Processing options include adding, changing, removing, printing, and posting entries.

The General Ledger system can handle up to a total of 700 Journal Entry transactions and 50 Standard Entry transactions per month.

Transfer Journals transfers data from the Accounts Receivable and Payable systems into the General Ledger.

Trial Balance may be run to determine if total debits equal total credits. It may be run any time you choose provided there are no unposted Journal Entries. The Trial Balance option will also print summarized and detailed reports.

Balance Sheet is used to present the financial health or status of a business at any specific time. It prints both summarized and detailed reports.

Income Statement details the revenues and expenses of a company over a period of time. The Income Statement is often known as "the bottom line" or the Profit and Loss (P&L) statement. This program prints both a summarized and detailed report.

Close Month begins the process that ends each monthly business cycle. Before you are allowed to close the month, you will be required to complete certain processes and print specific reports. Closing the month will also initiate closing the year when the month-end and fiscal year-end dates coincide.

If you are using either or both Accounts Receivable and Accounts Payable in conjunction with the General Ledger, the items you have

customized and the date you have specified must be identical within the system modules.

System Configuration

To use The Controller, you will need the following system:
- Apple II (with Applesoft Firmware Card and Auto-Start ROM) or Apple II Plus, with 48K of memory;
- Two (2) Apple II Disk Drives, one with controller;
- Video monitor (preferred) or television set.
- A compatible printer and printer controller card*.

Note: Apple II computer systems and Revision 1.1 of The Controller work with several printers and printer controller cards, including those specified below:
- Qume Sprint 5 (A2M0045)

Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM
Forms Tractor: Apple Product A2M0047
- Centronics 779 (A2M0011)

Card: Centronics Printer Interface Card (Apple Product A2B0007, included if printer is purchased from Apple Computer Inc.)

Technical Specifications

Recommended Limits:

General Ledger

Number of Accounts	250
Journal Entries Per Month	700
Standard Entries Per Month	50
Entries in One Batch	100
Different Journal Numbers	700
Amount of Any One Entry	$9,000,000.00
Amount of Any One Batch	$9,000,000.00
Balance in Any One Account	$90,000,000.00

Accounts Receivable

Customers per Data Diskette	250
Monthly Transactions per Diskette	750
Statements per Diskette	250
Account Transfers to G/L	100
Transactions per Batch	100
Number of Salespeople	99
Number of Diskettes	3
Customer Balance	$360,000.00
Any Customer Aging Period	$90,000.00
Any One Sale Amount	$90,000.00
Any One "Other" Amount	$9,000.00
Any One Tax Amount	$999.99
Amount of Any One Batch	$9,000,000.00

Accounts Payable

Number of Vendors	125
Number of Open Invoices	300
Checks Printed per Month	300
Invoices per Batch	100
Monthly Transfers to G/L	100
Distribution Accounts per Inovice	12
Amount of One Transaction	$999,999.99
Amount Owed per Vendor	$999,999.99
Amount of Any One Batch	$9,000,000.00
Discount Amount per Invoice	$9,999.99

Language:
Written in Applesoft BASIC.

Reports Generated by The Controller:

General Ledger:
- Chart of Accounts (no Balances)
- Chart of Accounts (with Balances)
- Chart of Accounts Changes
- General Journal Report
- Standard Entries Journal
- Trial Balance (Summary)
- Detail Trial Balance
- Balance Sheet (Summary)
- Detail Balance Sheet
- Income Statement (Summary)
- Detail Income Statement*
- Income Statement (Summary for Departments)
- Detail Income Statement (for Departments)

Accounts Receivable:
- Customer Master List
- Customer Mailing Labels
- Sales Journal (by Entry No.)
- Sales Journal (by Document No.)
- Payment Journal (by Entry No.)
- Payment Journal (by Document No.)
- Summary Aged Trial Balance*
- Detail Aged Trial Balance
- Monthly Activity Report
- Statements and Summary
- Sales Commission Report

Accounts Payable:
- Vendor Master List (by Vendor Name or Number)
- Vendor Mailing Labels
- New A/P Invoice Register (by Voucher No.)
- New A/P Invoice Register (by Vendor No.)
- A/P Cash Requirements*
- Open Invoices by Vendor
- A/P Paid Invoice Register
- Checks and Stubs
- A/P Distribution Journal
- A/P Disbursement Journal

*These are the key reports generated by The Controller. Samples of each are included in The Controller appendix, beginning on page 13.

The Controller Package Revision 1.1 Order No. A2D0012

With your Controller order, you will receive:
- System Master Diskette and one (1) back-up;
- Two (2) General Ledger System diskettes and one (1) back-up for each;
- General Ledger Data Diskette and one (1) back-up;
- Two (2) Accounts Receivable System diskettes and one (1) back-up for each;
- Accounts Receivable Data Diskette and one (1) back-up;
- Two (2) Accounts Payable System diskettes and one (1) back-up for each;
- Accounts Payable Data Diskette and one (1) back-up;
- Four (4) blank diskettes;
- Apple Controller Instruction Manual;
- 36 extra data diskette labels;
- Software License form, including an 800# for toll-free hotline support;
- Three-ring binder;
- Business forms kit sample and order forms;
- Diskette holders.

Accounts Payable Cash Requirements

Obtained via Menu: A/P
Selection: Open Invoices
Purpose: Informs you of the ongoing cash requirements based on due dates for all unpaid invoices. The report produces totals per invoice, totals per due date and running totals for all unpaid invoices.
Sequence: By due date

Item	Description
A	REPORT ID—1306.1—reference this unique identifying number when calling the Hotline
B	COMPANY NAME—the name of your company
C	REPORT TITLE—Accounts Payable Cash Requirements
D	DATE—date you entered for Today's Date
E	VENDOR NAME—the name of each vendor
F	VEN NO—vendor number, assigned by computer in Add Vendors
G	VOUCH NO—voucher number assigned to each invoice
H	INVOICE NUMBER—entered during New Invoices
I	INVOICE DATE—the date of the invoice
J	VOUCHER DATE—date the invoice was entered
K	INVOICE TOTAL—total amount of the invoice
L	INVOICE DISCOUNT—total amount of the terms discount for this invoice
M	INVOICE NET—amount to be paid to vendor for invoice (M = K − L)
N	DUE DATE—the date each invoice is due to be paid
O	DUE DATE TOTALS—total amount of invoices for this due date
P	DUE DATE TOTALS—total amount of discount for this due date
Q	DUE DATE TOTALS—total amount of invoice totals minus discount totals for this due date
R	RUNNING TOTALS—total amount of all invoices accumulated through this due date
S	RUNNING TOTALS—total amount of all discounts accumulated through this due date

01306.1 A — B TOP-OF-THE-ICEBERG ICECUBE CO. — C ACCOUNTS PAYABLE CASH REQUIREMENTS — D DATE 02/01/84 PAGE 1

VENDOR NAME (E)	VEN NO (F)	VOUCH NO (G)	INVOICE NUMBER (H)	INVOICE DATE (I)	VOUCHER DATE (J)	INVOICE TOTAL (K)	INVOICE DISCOUNT (L)	INVOICE NET (M)
CACTUS DELIGHTS	9	9	B4567	01/27/84	02/03/84	80.12	2.40	77.72
			02/06/84 (N)		DUE DATE TOTALS (O)	80.12	2.40 (P)	77.72 (Q)
					RUNNING TOTALS	80.12	2.40	77.72
SUNSHINE ICETRAY CO.	2	1	M2345	01/28/84	02/01/84	1000.00	30.00	970.00
			02/08/84		DUE DATE TOTALS	1000.00	30.00 (R)	970.00 (S)
					RUNNING TOTALS	1000.12	32.40	1047.72
AL'S PAPER CUPS	5	4	CM354	01/28/84	02/01/84	50.00 –	00	50.00 –
AL'S PAPER CUPS	5	7	Z2213	01/25/84	02/02/84	283.67	00	283.67
			02/24/84		DUE DATE TOTALS	233.67	.00	233.67
					RUNNING TOTALS	1313.79	32.40	1281.39
DESERT OASIS WATER CO.	1	5	GB215	01/26/84	02/01/84	900.00	27.00	873.00
			02/25/84		DUE DATE TOTALS	900.00	27.00	873.00
					RUNNING TOTALS	2213.79	59.40	2154.39
TUGBOAT ICEBERG MOVING	8	6	TM666	01/29/84	02/02/84	227.13	.00	227.13
COLDSTART FREEZER CO.	7	3	B333	01/28/84	02/01/84	1795.00	26.85	1768.15
PETE'S HOT PEPPERS	6	8	T1234	01/29/84	02/02/84	173.42	5.20	168.22
			02/28/84		DUE DATE TOTALS	2195.55	32.05	2163.50
					RUNNING TOTALS	4409.34	91.45	4317.89

Note: Key reports are shown less than actual size.

- T RUNNING TOTALS—total amount of all invoice totals minus all discounts accumulated through this due date
- U FINAL TOTALS—total amount of all invoices printed
- V FINAL TOTALS—total amount of all discounts printed
- W FINAL TOTALS—total amount of all invoices minus discounts printed

Detail Income Statement

Obtained via Menu: G/L
Selection: Income Statement

Purpose: This report illustrates the revenue and expenses of your company over a period of time. This report is commonly called the "P and L" or Profit and Loss Statement. All accounts with balances for year-to-date are printed.

Sequence: Numeric by account number

Item	Description
A	REPORT ID—01111.1—reference this unique identifying number when calling the Hotline
B	COMPANY NAME—the name of your company
C	REPORT TITLE—Detail Income Statement
D	DATE—date you entered as Today's Date
E	MONTH-ENDING DATE—current accounting month entered during Close Month or Startup procedures
F	CATEGORIES—Chart of Accounts category, followed by the account description
G	CURRENT MONTH—account total for the current month
H	YEAR TO DATE—account total for year-to-date
I	GROSS PROFIT/LOSS ON SALES—sales less cost of sales for current month
J	GROSS PROFIT/LOSS ON SALES—sales less cost of sales for the year-to-date
K	NET OPERATING INCOME—gross profit less operating expenses for current month
L	NET OPERATING INCOME—gross profit less operating expenses for year-to-date
M	NET INCOME/LOSS—net operating income plus other revenue less other expenses for current month
N	NET INCOME/LOSS—net operating income plus other revenue less other expenses for year-to-date

01111.1 A — B TOP-OF-THE-ICEBERG ICECUBE CO. — DETAIL INCOME STATEMENT — FOR MONTH ENDING 02/29/84 — D DATE 02/27/84 — PAGE 1

F	CURRENT MONTH (G)	YEAR TO DATE (H)
SALES		
SALES - MERCHANDISE	11,400.00	11,400.00
SALES - OTHER	222.42	222.42
TOTAL SALES	11,622.42	11,622.42
COST OF SALES		
TOTAL COST OF SALES	.00	.00
GROSS PROFIT/LOSS ON SALES (I, J)	11,622.42	11,622.42
OPERATING EXPENSES		
SALARIES - OFFICERS	1,787.50	1,787.50
LEGAL/ACCOUNTING FEES	75.00	75.00
RENT	250.00	250.00
DUES & SUBSCRIPTIONS	20.00	20.00
TOTAL OPERATING EXPENSES	2,132.50	2,132.50
NET OPERATING INCOME (K, L)	9,489.92	9,489.92
OTHER REVENUE		
TOTAL OTHER REVENUE	.00	.00
OTHER EXPENSES		
INTEREST EXPENSE	1,200.00	1,200.00
TOTAL OTHER EXPENSES	1,200.00	1,200.00
NET INCOME/LOSS (M, N)	8,289.92	8,289.92

Summary Aged Trial Balance

Obtained via Menu: A/R
Selection: Aged Trial Balance

Purpose: Shows who owes money and how current each customer's balance is. Only customers who have balances will be included in this report.

Sequence: Alphabetic by customer name

Item	Description
A	REPORT ID—01207.1—reference this unique identifying number if calling the Hotline
B	COMPANY NAME—the name of your company
C	REPORT TITLE—Summary Aged Trial Balance
D	DATE—date you entered for Today's Date
E	MONTH-ENDING DATE—current accounting month-end date you entered during Close Month or Startup procedures
F	CUST NO—Customer number assigned by the computer
G	CUSTOMER NAME—customer's name
H	PHONE NUMBER—customer's phone number, no area code
I	0–30 DAYS—amount of the customer's balance incurred during the 0–30 day aging period
J	31–60 DAYS—amount of the customer's balance incurred during the 31–60 day aging period
K	61–90 DAYS—amount of the customer's balance incurred during the 61–90 day aging period
L	PAST 90 DAYS—amount of the customer's balance outstanding over 90 days
M	TOTAL DUE—the total of all aging periods (I + J + K + L). This is the total amount the customer owes
N	TOTALS—totals of all customers printed

01207.1 A — B TOP-OF-THE-ICEBERG ICECUBE CO. — SUMMARY AGED TRIAL BALANCE — FOR THE MONTH ENDING 02/29/84 — D DATE 02/28/84 — PAGE 1

CUST NO. (F)	CUSTOMER NAME (G)	PHONE NUMBER (H)	0-30 DAYS (I)	31-60 DAYS (J)	61-90 DAYS (K)	PAST 90 DAYS (L)	TOTAL DUE (M)
1084	ABC COCKTAIL CO.	667-0111	.02	.00	.00	.00	.02
1088	HOTHOUSE PLANT CO.	555-1212	50.00	.00	.00	.00	50.00
1001	KENT, CLARK S.	819-4100	600.50	267.74	.00	.00	868.24
1010	MANY A SLIP TWIXT CO.	444-0120	112.90	.00	.00	.00	112.90
	TOTALS (N)		763.42	267.74	.00	.00	1031.16

The Apple Cashier

Software

A New Concept in Store Management

The Apple Cashier offers the small business owner a store management system which can increase profits through improved inventory control and sales entry. Using this system with your Apple II or II Plus, you can create and maintain customer/vendor files; process and monitor sales; order and receive stock; check profits, inventory, and cash; and generate management reports, invoices, and quotations.

Benefits

The Apple Cashier System...

- *increases sales revenue and profit by reducing losses caused by theft, since only authorized personnel can access the program to change inventory and financial transaction data...*
- *eliminates tedious, time-consuming record keeping, since it allows you to expense lost items out of inventory and print expense vouchers; prepare and print purchase orders; and quickly update your inventory file, customer list, and vendor information...*
- *allows you to easily determine your income from sales, since it automatically tallies daily, monthly and yearly cash and sales totals...*
- *saves time and labor costs, because it processes sales and updates inventory records after each transaction...*
- *assists you in determining your optimal inventory levels and reorder quantities, because it analyzes sales rates by item and tracks changes in inventory levels...*
- *prevents you from losing sales from stockouts by prompting you to reorder when inventory levels become low...*
- *simplifies the process of updating your accounting records by automatically providing total inventory value...*
- *increases employee productivity by allowing a clerk to check item availability and verify price without ever leaving the sales desk.*

The Apple Cashier—A Closer Look

After initializing the Apple Cashier System's master diskettes (explained in detail in the program instruction manual), the system is ready for use. The Store Management Menu is the main menu of The Apple Cashier; it allows you to access the seven main programs available in the system.

Access CREATE NEW DATA FILES to establish your inventory and/or customer master files. Preformatted screens allow you to insert appropriate information quickly and easily.

After you have created your master files, you can use the other programs in the Apple Cashier System. By selecting the DAILY TRANSACTIONS program from the Store Management Menu, you can process sales (printing invoices and packing slips), prepare quotations, print and record orders, receive and add new inventory to stock, expense items, and update your sales and cash totals.

If you access the MAINTAIN INVENTORY FILE program, you can add new items or change existing products in your inventory file. The MAINTAIN CUSTOMER FILE program allows you to individually access records in the Customer Master File. You can add the names and addresses of new customers, change information on current customers, search for and locate a particular name, or delete any names you wish.

To guard against the remote possibility of loss or destruction of your master diskette files, the Apple Cashier system offers the COPY DATA FILES program (Item 4 on the Store Management Menu), which allows you to make back-up copies of your Index, Inventory, and Customer files. You can make copies as often as they're needed.

Printing information on inventory value, turnover, backorders, item movement, and customers is accomplished by using the PRINT FILES program. There's no lengthy typing time required, since information is automatically printed quickly and letter-perfect.

If you make a system input error while using any one of the programs. The Apple Cashier will stop, display an error code and, in some cases, explain the error to you. It then waits for your correction of the problem before continuing.

System Configuration

To use the Apple Cashier system, you will need the following:
- Apple II (with Applesoft II Firmware Card), or Apple II Plus, each with 48K of memory; or
- Apple II with Apple Language System;
- a minimum of two (2) Apple Disk II drives, one with controller;
- a monitor or television;
- a Centronics printer;
- a Centronics Printer Interface Card (Apple Product A2B0007).

Technical Specifications

Language:
Written in machine language, usable with Applesoft BASIC.

Storage:
Up to 750 inventory line items or customers on a two disk drive system; up to 800 customers and 750 inventory line items each on a three drive system.

Documents and Reports Generated by The Apple Cashier System:
- Sales Slips (invoices);
- Packing Slips;
- Physical Inventory Checklist: inventory listing including stock number, quantity in stock, total price by part number, vendor, and total inventory;
- Turnover Report: analysis of sales rates by item which can be used to determine optimal inventory levels and reorder quantities;
- Back-ordered Items Report: back-ordered parts by customer and by total items on back-order;
- Item Movement Report: tracks changes in inventory levels;
- Inventory Value Report: gives the total carrying cost of each inventory item, as well as totals for accounting purposes.

Daily Transactions allowed are:
- sales processing;
- expense processing;
- quotations;
- inquiries into inventory;
- ordering;
- receiving;
- markup;
- daily totals.

Automatic Report Scheduler:
allows operator to run all management reports at one time.

Transactions that may be completed only by authorized personnel:
- Expense—to expense an item out of inventory and print an expense voucher;
- Ordering—to order from vendors and print purchase order forms;
- Receiving—to update inventory file with the receipt of stock and produce receiving report;
- Markup—to change the sales price field currently stored in the inventory file;
- Totals—to print today's cash and sales totals, and monthly and year-to-date sales totals;
- Maintenance—to create and change customer/vendor and inventory information;
- Store Management.

The Apple Cashier Package Order No. A2D0025

With your Apple Cashier order, you will receive:
- Apple Cashier System Diskette;
- Back-up Apple Cashier System Diskette;
- Two (2) Blank Diskettes;
- Apple Cashier System Instruction Manual;
- Software License Agreement;
- "Hotline" telephone support;
- Three-Ring Binder, a binder holder for two diskettes, and blank labels (18) for data diskettes.

Apple Writer

Software

Text Editing Made Simple

The Apple Writer program turns your Apple II Computer system into a sophisticated text editor—providing you with the capability to write, revise, edit, and print all types of documents quickly and inexpensively. You can easily perform every editing task, from correcting typographical errors to moving whole paragraphs. And you can precisely format and print your text letter-perfect every time.

Benefits

Apple Writer...
- *saves time often spent modifying, moving, and formatting text, with its extensive editing and printing commands...*
- *increases productivity by eliminating retyping because corrections can be made character-by-character, so there's no need to retype an entire line when only minor changes are required...*
- *is easy to learn and operate with its simplified command structure...*
- *saves paper costs and filing space with floppy diskette storage...*
- *reduces paperwork costs with its powerful editing capabilities...*
- *allows you to write in any order you choose, so text can be stored in sections and later combined in any order for printing...*
- *protects files from accidental loss through its program/system recovery and audible prompt features.*

Apple Writer—A Closer Look

The Apple Writer program diskette contains a Tutorial text file which you can view on your screen. It introduces you to some of the features of the Apple Writer editor, so that you'll feel more comfortable using the program for the first time. Just follow the simple instructions in the Apple Writer program manual to access the Tutorial.

The Apple Writer program is ready to use when the "Editor Menu" is displayed on your monitor or television screen.

By selecting INITIALIZE NEW FILE, for example, and pressing the "return" key, you may begin a new document. Simply enter your text on the Apple's keyboard, and it will be displayed simultaneously on your screen. Although only upper case letters will appear, Apple Writer will automatically translate them into lower case during printing. To capitalize a letter or word, use the "ESC" key; capitals will appear as inverse video on your screen and upper case when printed.

When typing your text, pressing the "return" key is necessary only at the end of paragraphs. Apple Writer will automatically insert all other "returns" during printing. You can type continuously—and faster—since there's no need to press the "return" key at the end of every line.

If you want to insert a new word or sentence within your text, move the cursor to the desired location and begin typing. To delete information, use one of the Apple Writer commands that allow you to edit out by word, sentence, or block of text. Or simply position the cursor after the data to be deleted and backspace.

Apple Writer also provides a powerful automatic or manual "search and replace" feature. If you've misspelled a word throughout the text, for example, enter the misspelled word and its correct spelling. Then type two simple commands, and Apple Writer will change every misspelling of the word instantly. If you've overused a word and wish to change it only in specific locations, enter the word and an appropriate synonym. Apple Writer will lead you through the text, stopping at each occurrence of the word. You can then specify where you wish each substitution to be made.

To format text, just type one of the four commands that center, left-, right-, or fill-justify lines during printing.

With your Apple Computer System connected to a compatible printer, Apple Writer will print your finished documents automatically.

The Apple Writer "Print Menu" will be displayed after you have selected PRINT FILE from your Editor Menu.

To print your document, select PRINT NEW DOCUMENT and press the "Return" key. Apple Writer will then display a listing of printer parameters.

Specify desired line spacing, number of lines per page, page numbering, and margins. Then press the "return" key once more. Apple Writer will print your document exactly as you've specified.

With Apple Writer, a first draft can be the final copy—every time.

System Configuration

To use the Apple Writer program, you will need the following system:

- Apple II or Apple II Plus, with 48K of memory;
- Apple Disk II with controller;
- a video monitor or television;
- a compatible printer*;
- a printer controller card*.

*Note: The Apple Computer System works with several printers and appropriate controller cards, including those specified below:

- Apple Silentype Printer
  Card: Silentype Interface Card (supplied with printer)
- Centronics 779
  Card: Centronics Printer Interface Card (Apple Product A2B0007, included if printer is purchased from Apple Computer Inc.)
- Printronix
  Card: Parallel Interface Card (Apple Product A2B0002)
- Qume Sprint 5, Diablo Hyterm, and NEC Spinwriter 5510R
  Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM

Technical Specifications

Language:
Written in machine language, usable with Integer BASIC or Applesoft.

Display:
Up to 24 lines of 40 characters/spaces each. Upper case displayed in inverse video.

Storage:
Up to 31,901 characters per file, 95 pages of text per diskette.

Editing Functions:
Cursor Control—Cursor can be moved up, down, left or right one space at a time; up or down 12 lines at a time; or to beginning or end of text.
Free Memory—Allows user to check amount of memory available.
Disk Access—Allows user to catalog or save files to diskette.
Upper Case Conversion—Allows the user to change up to 15 lines of text into upper case instantly.
Insert/Save—Allows the user to insert a stored file into a new document or save a file segment to the diskette.
Search and Replace—Allows automatic or manual search and replacement of user-specified "strings", including single characters, or words and phrases, parts of words and phrases, sentences, etc., up to a maximum of 76 characters each.
Deletions—Deletes by character, word or paragraph up to 256 characters.
Move Block—Moves block of data within a file.

Printing Functions:
Justify—Allows user to specify centered, or fill-, right-, or left-justified lines of text.
New Page—Allows user to specify when a new page should be started.
Margin Set—Allows user to set top, bottom, left and right margins.
Line Spacing—Allows user to select the number of spaces between lines.
Paper—Provides for continuous fan-fold and single-sheet paper.

Note: Apple Writer does not provide tab, proportional spacing or underscoring capabilities.

The Apple Writer Package Order No. A2D0026

With your Apple Writer order, you will receive:

- One (1) Write-Protected Apple Writer Diskette
- One (1) Non-Write Protected Apple Writer Diskette
- Apple Writer Instruction Manual

Apple Plot

Software

"Charting" The Way

The Apple Plot program allows you to use your Apple Computer System to create, revise, and print highly detailed charts and graphs quickly and easily. Any information, from sales and stock activities to caloric intake and miles per gallon, can be presented in a visually appealing, comprehensive bar, line or scatter chart.

The program allows you to specify each axis, update and change information, and label the charts exactly as you wish. Graphs can be colored for differentiation and effect. With the Apple Graphics Tablet, you can further customize any graph with a company logo or other marking. Transparencies of finished graphs can be used for presentations; hard copy can be printed for reports and later analysis.

Benefits

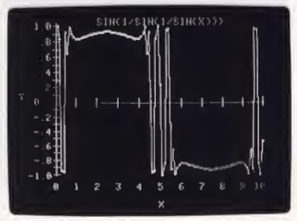
Apple Plot...

- *helps you understand numerical information by displaying it graphically...*
- *offers the capability for displaying externally generated data, because it can be used with other data base programs...*
- *saves countless hours of design and drawing time by producing a finished chart automatically—you need only provide data points and choose the format...*
- *offers versatility in presenting material, because it provides six graph forms from which to choose...*
- *allows data to be differentiated on the screen through your Apple's color capability...*
- *permits design of custom plots because the user controls every graph parameter...*
- *provides for comparisons because two graphs can be displayed on the same axis, and each graph can contain up to 100 points.*

Apple Plot—A Closer Look

It's easy to put Apple Plot to work. The program diskette contains sample data sets to help you learn to create custom plots. Following the step-by-step instructions in the Apple Plot manual, you can "chart" your way, selecting functions from the program's main menu.

Graph Format Selection—This Apple Plot option offers a choice of six graph formats for plotting up to two separate data sets in a single display. If you're plotting more than two, there is a special overlay capability which allows additional data sets to be placed on the same graph. You can also physically exchange the coordinate data of the two data sets automatically, as well as specify colors.



X-Axis and Y-Axis Parameters—These options let you specify the limits, resolution and labeling of the axes. Apple Plot will ask questions about the data (for example, Is This a Monthly Plot?), display a possible reply (called a "default" reply), and wait for you to either confirm its answer or type in a different one.

Data Entry and Editing—This option is used for entering the number of data points in a graph; specifying where they are to be placed; changing information if necessary; or displaying a list of the data points in the current data set.

Display Graph—This option actually produces the graph on the screen.

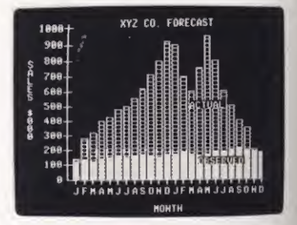
Save Data to Disk—There are two forms in which you can save Apple Plot data onto an Apple diskette: Data and Picture. Data saves the data points in both data sets, the selected graph format, and all of the X- and Y-axis parameters. Picture saves the Apple's high-resolution screen image of the most recently displayed graph (especially useful when other graphs have been overlayed).

Recall Data from Disk—Although there are only two ways to store Apple Plot data onto a diskette, there are three in which to recall it: Data, Data (Raw) and Picture. When you recall Data, Apple Plot will display all stored data; when you recall Data (Raw), it will provide only the data points (used for reading data generated by external programs.) Picture recall simply redraws a previously developed high resolution screen image, exactly as it looked when it was saved.

Clear for New Graph—Resets all parameters and data to begin a new graph.

Print the Graph—Provides hard copy printout of graphs when an Apple Silentype or Qume Sprint 5 is connected to your system.

Additionally, there's a special program on the Apple Plot diskette that allows you to use your stored charts and graphs in a "slide show" on your monitor or television screen. This unique capability is ideal both for reviewing different graphs and for making presentations without the need for hardcopy or other printed visuals.



System Configuration

To use Apple Plot, you will need:

- Apple II (with Applesoft Firmware Card), or Apple II Plus, with 48K of memory; or
- Apple II with Apple Language System;
- One Apple Disk II drive with controller (second drive optional);
- a video monitor or television;
- a compatible printer* (optional);
- a printer controller card* (optional).

*Note: An Apple Computer System using Apple Plot works with the following printers and appropriate controller cards:

- Apple Silentype Printer
  Card: Silentype Interface Card (supplied with printer)
- Qume Sprint 5
  Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM.

Technical Specifications

Language: Written in Applesoft BASIC.

Program Status Codes:

Ranging Data—displayed when data has been read in the Raw format.
Check Your Input—displayed, accompanied by three "beeps", whenever Apple Plot encounters an error or inconsistency of any kind when trying to recall data from the diskette.
Clearing—displayed when Apple Plot is resetting all parameters to their original default values.

Default Values:

Graph Format Selection: Standard Graph with Graph Overlay
(bar and scatter plots also available)
Overlay Additional Graphs: OFF
Color for Plot 1: White Color for Plot 2: Blue

X-Axis Parameters:

Monthly Plot: No
First Month: 1
Number of months: 12
Yearly Plot: No
Number of first year: '80
Number of last year: '90

Number of Divisions: 10
Maximum X-Axis Value: 1
Minimum X-Axis Value: 0
X-Axis Label: X
Use Label #1: No
Change Label #1: No
Text for Label #1: (blank)

Use Label #2: No
Change Label #2: No
Text for Label #2: (blank)
Extended Vertical Grid Lines: No

Y-Axis Parameters:

Number of Divisions: 10
Maximum Y-Value: 1
Minimum Y-Value: 0

Y-Axis Label: Y
Title of Graph: Unformatted Graph
Extended Horizontal Grid Lines: No

Data Entry and Editing:

Number of data points:
Starting point for plot 1: 0
Ending point for plot 1: 0

Starting point for plot 2: 0
Ending point for plot 2: 0

Data Entry:
All data points, X-value: 0
All data points, Y-value: 0

Display Graph:

Location of label 1
(before positioning): upper left-hand corner
Location of label 2
(before positioning): upper left-hand corner

The Apple Plot Package Order No. A2D0033

With your Apple Plot order, you will receive:

- One (1) Write-Protected Apple Plot diskette
- Apple Plot Instruction Manual

Apple Post

Software

Mailing List Maintenance the Apple Way

Apple Post is a mailing list system designed for your Apple II that allows you to enter, edit and store names, addresses and telephone numbers. When your Apple Computer System is attached to a compatible printer, Apple Post will also print mailing labels, address and telephone lists, and your personal zip code directory.

Benefits

Apple Post...

- *allows small businesses to take advantage of direct mail to customers, because it uses the power of the Apple computer to maintain customer lists and print mailing labels...*
- *locates names that you wish to modify or which may have been misspelled during data entry, through its phonetic search routines...*
- *provides you with the capability to perform demographic mailings quickly and easily, because it will print addresses by specified zip codes or other identifiers through its special search routines...*
- *offers you the option of printing complete or specified portions of any list for your review or files through its select routine...*
- *automatically prints mailing labels of completed or selected mailing lists through its labels routine.*

Apple Post— A Closer Look

An Apple Post list will hold approximately 500 name and address records on a single diskette, for use with a two-drive system. A maximum of 2,590 records, or five full diskettes, may be kept online at the same time with a six-drive system. If you are going to be creating large lists, consider the possibility of breaking them up into smaller lists. For example, a subscription list for a monthly magazine could be broken into one list for the subscriptions that would expire in January, a second for those that would expire in February, etc. This would allow Apple Post to handle over 30,000 subscriptions with six drives, or 6,000 with two drives.

Learning the function of each Apple Post command is all it takes to begin using the Apple Post system. These commands appear in the VALID COMMAND LIST at the beginning of the program. A few are detailed here to give you a feeling for the program.

EXPLAIN may be used to display a brief three-line summary of any listed command in the system. It's especially helpful if you forget what a certain command will do.

The ENTER command permits you to add new entries to the Apple Post name and address list. After selecting this command, your screen will display the NEW ENTRY preformatted screen.

Most of the entries are self-explanatory. The ATTENTION line is a free line of 20 characters. It is printed before the name line on a mailing label. If the name line contains the name of a company, for example, the attention line could contain the name of an individual or department within the company.

The SORT KEY is the line used by the Apple Post system to decide where on the diskette to file the entry. All entries are stored in alphabetical order by sort key. The sort key line cannot be empty. When a name and address is first entered, a default reply (for example, the person's last name) will appear on the sort key line. If you wish to change the sort key, type the new entry and the default reply will disappear as you type over it.

To "flag" or identify some names as belonging to special groups, Apple Post provides the UTILITY line. It will be referenced when you use the SELECT command to specify a group or groups for which you need to print a listing or mailing labels.

The EDIT command allows you to modify any line of a name and address record, except for the sort key line, or delete the entire entry.

If you are trying to locate a certain name and you're not sure of the way you spelled it during entry, you will use the FIND command. The spelling and spacing of the name need not be identical to what was entered; the Apple Post system will search for any entries that are phonetically similar to the one you have specified.

The ZIPFIND command selects name and address records by Zip Code and permits you to modify any line of the names and addresses in the list.

The Apple Post manual explains each command in detail.

System Configuration

To use Apple Post, you will need:

- Apple II (with Applesoft Firmware Card), or Apple II Plus, with a minimum of 32K memory; or
- Apple II or Apple II Plus, with the Apple Language System;
- Two (2) Apple Disk II drives, one with controller;
- a compatible printer* (optional);
- a printer controller card* (optional);

*Note: The Apple Computer System works with several printers and appropriate controller cards, including those specified below:

- Centronics
  Card: Centronics Printer Interface Card (Apple Product A2B0007)
- Printronix
  Card: Parallel Interface Card (Apple Product A2B0002)
- Qume Sprint 5, Diablo Hyterm, and NEC Spinwriter 5510R
  Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM

Technical Specifications

Language:
Written in Applesoft BASIC

Function:
Mailing List Maintenance

Maximum Size of an Online List:
2590 names

Field Sizes:

Name	25 characters
Street Address	25 characters
City & State	20 characters
Zip Code	9 characters
Attention Line	20 characters
Telephone Number	12 characters
Sort Key	10 characters
Utility Field	10 characters

Record Sizes:

Name & Address Files	155 bytes
Soundex Index File	17 bytes
Zip Code Index File	17 bytes

Disk Drive Requirements

1 to 500 Names	2 drives
501 to 1000 Names	3 drives
1051 to 1570 Names	4 drives
1571 to 2105 Names	5 drives
2106 to 2590 Names	6 drives

The Apple Post Package Order No. A2D0013

With your Apple Post order, you will receive:

- One (1) Apple Post Diskware™ diskette;
- Apple Post Mailing List System Manual.

Dow Jones Series Portfolio Evaluator

The Stockmarket at Your Fingertips

The Apple Portfolio Evaluator program allows you to store, modify, and update approximately 100 individual portfolios of up to 50 stocks each on a single diskette. Additionally, by connecting your Apple Computer System to a telephone, the Portfolio Evaluator program permits you to access quotes for more than 6,000 companies using the Dow Jones News Retrieval System.

The Apple Portfolio Evaluator is a convenient, time saving way to keep your finger on the pulse of the stockmarket.

Benefits

The Portfolio Evaluator...

- *saves time usually spent obtaining quotes from a broker by giving you access to information about stocks, preferred stocks, and warrants listed by Dow Jones...*
- *eliminates the need for time-consuming math, because it instantly tabulates the current value—gains or losses—of each portfolio, and displays it on the screen or on paper via a printer...*
- *increases your efficiency, because it automatically catalogs the portfolios by name and displays the complete catalog for your review upon command.*

Portfolio Evaluator— A Closer Look

The main menu of the Portfolio Evaluator contains three program options.

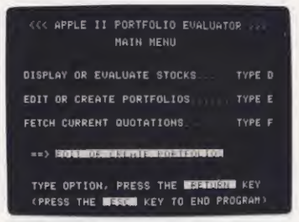
To create a portfolio, select EDIT. The edit module will be loaded from the diskette, and the Portfolio Evaluator program will lead you through the data entry process step-by-step. Preformatted screens assist you in entering stock symbol, number of shares, purchase date, and purchase price for each stock in a portfolio.

Perhaps the most exciting aspect of the Portfolio Evaluator is its ability to let you "log on" to the Dow Jones News/Retrieval Service. With your password (which will be given to you by your dealer when you sign the Dow Jones Stock Quote Reporter Agreement), you will be able to access the Dow Jones computer and "fetch" current quotes in real time. (To conform with Federal regulations, stock quotations are delayed 15 minutes.) You'll need a working telephone, a modem, and a special interface to take advantage of this part of the program. (See System Configuration.)

To access Dow Jones, select FETCH CURRENT QUOTATIONS from the main menu; the "log on" module will be loaded into your Apple. Once again, the Portfolio Evaluator will lead you through this part of the program step-by-step. You'll be instructed to dial a Dow Jones telephone number (local, in most cases) and insert your telephone receiver into the modem. After you have satisfied the Dow Jones computer with an acceptable password, you'll be able to update every quote in every portfolio on your diskette.

You can review a revised portfolio simply by choosing DISPLAY OR EVALUATE STOCKS from the main menu. The display module will be loaded from the diskette, and you will be asked for the name of the portfolio you wish to review. Type the name and press the "return" key. If you've forgotten the name of the portfolio, simply type a question mark (?) and press the "return" key to view the diskette catalog.

After identifying the desired portfolio from the catalog, press the space bar and enter its name. "Searching for portfolio" will appear on your screen. In a few seconds, you will be presented with a list of four options.



The first three options listed allow you to obtain previously-stored information within the specific portfolio; the fourth option—Printer On/Off—allows you to print that information.

System Configuration

To use the Portfolio Evaluator Program, you will need:
- Apple II (with Applesoft Firmware card), or Apple II Plus, with minimum 32K of memory; or
- Apple II with the Apple Language System;
- Apple Disk II with controller;
- Apple Modem IIB (supplied with Apple Communications Interface Card);
- a video monitor or television;
- a standard, working telephone;
- a compatible printer*;
- a printer controller card*;
- "password" for the Dow Jones News Retrieval Service

*Note: The Apple Computer System works with several printers and appropriate controller cards, including the following:
- Apple Silentype Printer
Card: Silentype Interface Card (supplied with printer)
- Centronics
Card: Centronics 779 Printer Interface Card (Apple Product A2B007, included if printer is purchased from Apple Computer Co.)
- Printronix
Card: Parallel Interface Card (Apple Product A2B0002)
- Qume Sprint 5, Diablo Hyterm, and NEC Spinwriter 5510R
Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM

Technical Specifications

Storage:
Up to 50 stocks in a single portfolio; 100 portfolios of 50 stocks each on a single diskette.

Language:
Written in Applesoft BASIC.

Dow Jones Access:
15-minute tape delay; exchanges include NYSE, AMEX, and OTC NASDAQ.

Note: The cost of the Portfolio Evaluator package includes the one-time password fee necessary to use the Dow Jones News Retrieval System. There are additional connect-time charges, as per the existing Dow Jones rate schedule. Your dealer can explain these to you.

The Portfolio Evaluator Package Order No. A2D0007

With your Portfolio Evaluator order, you will receive:
- Apple Portfolio Evaluator diskette;
- Apple Portfolio Evaluator Instruction Manual;
- Dow Jones News/Retrieval Directory;
- Dow Jones Stock Quote Reporter contract.

Dow Jones News & Quotes Reporter

Software

Selected Business News at the Touch of a Key

The Dow Jones News & Quotes Reporter is a powerful business software package, designed especially for investors, busy managers, and executives who need fast access to stock market news and information. It allows users to retrieve—over telephone lines—past and current news stories and headlines from the Dow Jones News/Retrieval Service, The Wall Street Journal, *and* Barron's, *as well as quotations for more than 6,000 companies traded on the major exchanges.*

News & Quotes Reporter can also be used in conjunction with Portfolio Evaluator, another Dow Jones program from Apple. Portfolio Evaluator allows you to store, modify, and update approximately 100 individual portfolios of up to 50 stocks each on a single diskette. This capability—coupled with News & Quotes Reporter's access to late-breaking financial news and stock quotations—provides the tools and information needed for sophisticated portfolio creation and management.

The Dow Jones News & Quotes Reporter is your personal key to making sound investment decisions in a rapidly changing world.

Benefits

The Dow Jones News & Quotes Reporter package...
- *saves time spent skimming and searching through business media, by putting financial headlines and news stories at your fingertips...*
- *keeps you informed of stock price fluctuations, by providing fast access to stock quotations for more than 6,000 companies listed on the major stock exchanges...*
- *renders concise records for business or tax purposes through a monthly Dow Jones billing.*

Dow Jones News & Quotes Reporter —A Closer Look

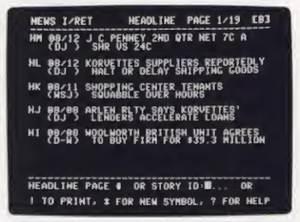
The main menu of the Dow Jones News & Quotes Reporter contains five program selections.

You can access, display, and print news headlines and entire stories from the worldwide network of the Dow Jones News/Retrieval Service, *The Wall Street Journal,* and *Barron's*. You can also access timely stock and composite quotes on corporate stocks and bonds, options, mutual funds, and treasury notes and bonds on the New York, the American, the Mid West, and the Pacific Stock Exchanges, plus the Over-the-Counter market (OTC NASDAQ).

You can "log on" to the Dow Jones News/Retrieval Service over telephone lines, using either an autodial or acoustic modem and a special password. (The password is obtained from your dealer at the time you purchase the program.) To access news items, select NEWS RETRIEVAL SERVICE from the main menu. Your Apple II System automatically initiates the log-on procedure, even automatically dialing the correct phone number if you have an autodial modem.

You can obtain news either by category or company. For example, you may be interested in up-to-the-minute foreign news—say, from the Mid-East—or in current stories concerning aerospace, mining, or a particular company. Using NEWS RETRIEVAL SERVICE, simply enter the appropriate symbol. Then choose the most recent news story, or the first page of subject-related headlines. There may be less than a page or many pages of headlines, listing some stories as far back as three months.

Using one of several suggested printers (see System Configuration), you can also print news stories in their entirety, or the full list of headlines (one page at a time). Simply type the "!" symbol, and the news item or list of headlines that you're reading on the video

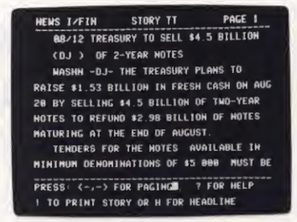


monitor will be printed.

Another selection option available from the main menu is STOCK QUOTE SERVICE, which allows you to access Dow Jones' securities quote data base and obtain current stock quotations. (To conform with the various exchange regulations, stock quotations are delayed at least 15 minutes.) As it does with NEWS RETRIEVAL SERVICE, News & Quotes Reporter leads you step-by-step through the STOCK QUOTE SERVICE procedures.

The third option on News & Quotes Reporter's main menu, CUSTOMIZING FEATURES, allows you to print news stories either at 40 or 80 characters wide. You can switch easily from 80-character/line hardcopy for news stories, to 40-character/line hardcopy for the Dow Jones Industrial Averages. CUSTOMIZING FEATURES also lets you enter and maintain your password (supplied by Dow Jones), and enter and maintain two telephone numbers for use with an autodial modem.

Selection 4, DISCONNECT DOW JONES, simply disconnects your line from the Dow Jones phone number. With this option, you "hang up" and don't continue paying connect-time charges, but your system is left still running, connected, and ready to log back on, as soon as you need News & Quotes Reporter again. Selection 5, EXIT NEWS & QUOTES REPORTER, terminates the News & Quotes Reporter program.



System Configuration

To use the Dow Jones News & Quotes Reporter you will need:
- Apple II or Apple II Plus, a minimum 48K of memory;
- Apple Disk II with controller and 16-sector PROMs;
- Apple Modem IIB, with Apple Communications Interface Card;
- a video monitor or television;
- a standard, working telephone;
- a printer and interface card* (optional);

Note: The Apple Computer System works with several printers and appropriate interface cards, including the following:
- Apple Silentype Printer

Card: Silentype Interface Card (supplied with printer)
- Printer IIA (Centronics)

Card: Centronics 779 Printer Interface Card (Apple Product A2B0007, included if printer is purchased from Apple Computer Inc.)
- Qume 5/45

Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM

Technical Specifications

Language:
Written in Pascal (Run only—Language System not required).

Dow Jones Access:
Minimum 15-minute tape delay; exchanges include NYSE, AMEX, Mid-West, Pacific, Composite, and OTC NASDAQ.

Note: The cost of the Dow Jones News & Quotes Reporter package includes the one-time password fee necessary to use the Dow Jones News/Retrieval Service. In addition, there are also Dow Jones connect-time charges. If you already own Apple's Portfolio Evaluator program, then you've paid for and received a password that's usable with News & Quotes Reporter. Though you have to pay the password fee again as part of the News & Quotes Reporter package, the amount will be credited to your account, toward non-prime connect time. Your dealer can further explain these arrangements to you.

The Dow Jones News & Quotes Reporter Package Order No. A2D0030

With your News & Quotes Reporter order, you will receive:
- Apple's Dow Jones News & Quotes Reporter master diskette;
- Apple's Dow Jones News & Quotes Reporter back-up diskette;
- Apple's Dow Jones News & Quotes Reporter Instruction Manual;
- Dow Jones News/Retrieval and Stock Symbol Guide;
- Dow Jones News/Retrieval Service contract and password;
- One hour of free, introductory connect time, to be used during non-prime time hours, within 15 days of purchase of the News & Quotes Reporter package. (Your dealer can tell you the non-prime time hours in your area.)

Tax Planner

Software

The Personal Financial Planning Tool

Tax Planner—an innovative program designed for use with Apple II and II Plus computers—allows you to determine the federal income tax advantages or liabilities that result from personal financial decisions. It provides you with the capability to construct various income scenarios, and then compare the federal income tax impact of each. Additionally, Tax Planner instantly computes the financial consequences of income-affecting decisions for up to nine years in the future. This means you can determine the best time to make a financial move (for example, sell property or take losses on investments). And you can print out your tax strategies, or store them on diskettes, ready for fast retrieval and modification.

Tax Planner—the tool that can help you better manage your personal income and the tax mechanisms that affect it.

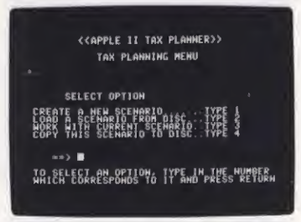
Benefits

Tax Planner...
- *provides you with the capability to optimize the federal income tax advantages available to you, because it lets you quickly compare the tax consequences of various financial decisions...*
- *assists you in choosing the best time to make certain financial moves, by instantly computing their impact on income taxes in current and future years...*
- *helps clarify current federal tax regulations, because you can experiment with various financial scenarios and observe how tax mechanisms apply to each...*
- *increases your productivity, by allowing you to quickly develop or change tax strategies.*

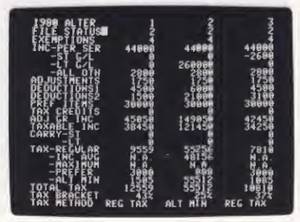
Tax Planner—A Closer Look

Tax Planner's main menu consists of four options. To begin using the program, select TAX PLANNING. Before tax computations can be performed, you will be asked to provide some information, including how far into the future you wish to plan (up to nine years), and your taxable income for each of the four preceding years. If you choose to plan only for next year, you may specify the number of alternative scenarios to be examined for that year. After you've provided this information, your screen will display the Tax Matrix, a skeletal list of items which affect your federal income tax situation. These include your tax filing status, long- and short-term capital gains, income, deductions, and adjustments.

Suppose your base year is 1980 and you wish to do some planning for 1981 and 1982. On the screen, the matrix will display three columns labeled 1980, 1981, and 1982. Tax Planner will automatically compute your adjusted gross income, your estimated tax, and your tax bracket, once you've filled in the information above "ADJ GROSS INC."



Setting up your matrix usually requires some time and careful thought. But once it's complete, Tax Planner does all the rest of the work—the tedious tax calculations—for you. To compute your adjusted gross income, taxable income, taxes, and other figures, just press the "C" (for "compute") key. Tax Planner automatically computes your tax by income averaging as well as by the regular method. It also computes the maximum tax on personal service income, the minimum tax on preference items, and the alternative minimum tax. In addition, your tax bracket and the tax computation method most advantageous to you are determined for each year or financial scenario.



You can create a matrix with as many as nine columns, each containing alternative sets of tax data for a single year. Although the screen displays only three columns at a time, up to nine can be stored

within any single scenario. (The above example, for instance, could have included up to six additional years—in all, a tax strategy for 1980 through 1988.) The additional columns are moved, or "scrolled," on and off the screen, simply by pressing the left or right cursor movement keys.

With Tax Planner, you can use a matrix to quickly perform "what if" experiments that otherwise would consume hours of tedious calculations. Suppose, for instance, that you're thinking about selling your home, and you wonder if it would be more advantageous in tax savings to sell it this year rather than next. Simply include the expected sale price in this and next year's cell, letting Tax Planner compute the results in each case. A quick comparison will reveal the more advantageous timing for the sale.

Once you've developed a tax scenario you want to keep, save it on your diskette by selecting FILE CLERK from the main menu, and following the step-by-step instructions displayed on your monitor. Or choose the PRINTER option to set your printing parameters and print out the strategy.

Because Tax Planner incorporates the current federal tax laws, you can be assured of the validity of its computational results. In addition, if you fill out and mail the user registration card that accompanies the program, Apple Computer Inc. will keep you informed of any product changes corresponding to tax law revisions.

Whether you're a financial advisor who wants to bring the latest technology to bear on your client's tax situations, or an individual with substantial opportunities for advantageous tax treatment of income, you'll find that Tax Planner will become an indispensable tool for quickly generating dollar-saving financial strategies.

System Configuration

To use the Tax Planner, you will need:
- Apple II or Apple II Plus, with a minimum 48K of memory;
- Apple Disk II with controller and 16-sector PROMs;
- video monitor or television;
- printer and interface card* (optional);

Note: Apple Computer systems work with several printers and appropriate interface cards, including the following:
- Apple Silentype Printer
Card: Silentype Interface Card (supplied with printer)
- Qume Sprint 5/45
Card: High Speed Serial Interface Card (Apple Product A2B0005)
- Printer IIA (Centronics)
Card: Centronics 779 Printer Interface Card (Apple Product A2B0007, included if printer is purchased from Apple Computer Inc.)

Technical Specifications

Language:
Written in Pascal (Run only—Language System not required).

Control Keys:

Cursor Movement	
Up:	I
Down:	M
Left:	J
Right:	K
Cell to Cell:	RETURN (across, then down)
Within a Cell:	<—(to "back-out" of an incorrect data entry)
Data Entry	
Digits:	0,1,2,3,4,5,6,7,8,9 (dollars only)
Duplicate:	D (duplicates value for same line item in next cell within a row)
Fill:	F (duplicates value for same line item in all cells within a row)
Command	
Help:	?
Compute Taxes:	C
Main Menu Return:	ESC

The Apple Tax Planner Package Order No. A2D0040

With your Tax Planner order, you will receive:
- Two (2) Tax Planner diskettes (master and back-up);
- Instruction manual;
- Customer license agreement;
- User registration card.

VisiCalc™ *III*

The Electronic Worksheet

VisiCalc III is a powerful new version of the award-winning VisiCalc software, designed especially for use with the Apple III computer system. It virtually eliminates calculator, paper, and pencil in developing plans and analyzing results. Any problem you might wish to tackle using rows and columns can be solved quickly—and accurately—with VisiCalc III. You can create your own models or use an existing one from the VisiCalc III library of "tool kits." General purpose business, real estate, and financial models are already available, with more planned for the future.

Managers can use VisiCalc III to plan budgets, create forecasts, and develop pricing strategies. Financial professionals can prepare statements, compute ratios, and modify projections. Scientists and engineers can study causes, effects, and tradeoffs—all in seconds, instead of hours or days.

One of the most innovative and versatile planning tools ever designed, VisiCalc III is a powerful productivity tool for every manager and professional.

Benefits

VisiCalc *III*...
- *increases personal productivity, because of its flexibility, ease of use, and high-speed computation...*
- *can be put to work immediately, because it allows you to write and use complex "programs" without learning a programming language...*
- *speeds data manipulation through an extensive, built-in library of financial, statistical, and scientific functions...*
- *expands the effective workspace of your monitor screen, because the Apple III's four cursor control keys allow rapid display of any portion of a large spread sheet...*
- *simplifies data checking and comparison through its "split-screen" capability, which allows you to display, move, and modify widely separated entries side by side...*
- *eliminates trial-and-error columnar formatting of documents, because its display—with 80 upper and lower case characters per line—prints exactly as it appears on the screen...*
- *increases your data handling capabilities, because the Apple III's large, 65K-byte user memory space allows you to construct and work with very large models...*
- *enhances the appearance of your reports, because you can title rows and columns—and vary the numeric and graphic format—to produce the look you want.*

VisiCalc *III*— A Closer Look

To use VisiCalc *III*, simply insert the program diskette into the Apple *III* disk drive and "boot" the system. On your monitor screen you'll see an electronic worksheet—resembling a columnar pad—of up to 63 columns and 254 rows. At the juncture of any column and row, you can type in words, numbers, or formulas.

Your monitor screen is a "window" which allows you to view a section of the entire VisiCalc *III* worksheet. The window can be moved, or "scrolled," in all four directions for viewing every section. Or you can split the screen into two "windows," so that you can compare pieces of data that are in different places on your worksheet. You can even synchronize "windows" so that they move together, always keeping particular lines or columns of data next to one another.

VisiCalc *III*'s cursor is a reverse-field strip, or "box," one column wide (you set the width you need) and one row deep. When "filling in"

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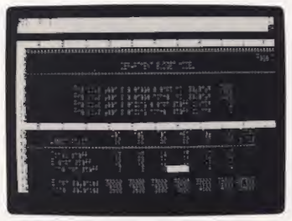
the worksheet, the new values and words you enter are displayed within this box as you type them.

By using either the Apple ///'s arrow keys, or the "GO TO" capability of VisiCalc ///, you can quickly move the cell cursor to any area of the worksheet. Visible at any given time are 20 rows of data; the number of columns you can see depends on the column width you've designated. Typically, you will see at least eight columns—the same number that would fit on an 8½ inch sheet of paper.



Entering or changing values and words on the worksheet is quite straightforward. First, position the box cursor to the place where you want the data to appear (or where you wish to change data already entered). Then simply enter the new numbers or words.

Titles and column headings can be written anywhere on the worksheet. When placed either along the top or down the left-hand side, you can "lock" them into place. Once locked, the title or column heading will "follow" and identify the data associated with it, even when you move to the furthest row or column position. And you can easily unlock titles whenever you want.

When you enter a formula, it will be displayed on the top row of the screen. If you change it at some point, the new values that result will be calculated and displayed instantly on the worksheet.

Formulas can be as simple or as complex as you like. For instance, VisiCalc /// can add, subtract, multiply, or divide values located anywhere on the screen—even those values derived by other formulas. A built-in function library conveniently provides many financial, scientific, statistical, and mathematical functions—including net present value, average value and transcendental functions. The result of any calculation is displayed instantly on your screen.

In addition, a replication capability allows you to repeat a formula automatically many times, with different variables substituted. For example, the formula you use to compute January's profit can be replicated to compute profits by month from February through December as well. VisiCalc ///'s replication feature automatically substitutes the appropriate data elements for each month.

Because VisiCalc /// performs complex calculations instantly, you can play "What if...?" as often as you like to solve thousands of different problems. For example, imagine that you've created a business forecast model that takes your gross profit, cost, and net income into account. Sometime later, you begin to wonder what the impact would be if your vendors decided to raise finance charges by 2%. With a few keystrokes, you can update your forecast based on this new assumption, and VisiCalc /// will perform the calculations and display the new results instantly for your review.

Another useful feature of VisiCalc /// is its "Insert and Delete" editing capability. Using Insert and Delete you can add or delete entire rows or columns in your worksheet model. For instance, suppose you suddenly see that the forecast or plan you're working on is more complex than had been originally thought, and you wish to add more elements to your model. VisiCalc ///'s Insert and Delete feature allows you to add them painlessly, without having to redesign the entire worksheet. Similarly, you can move entire rows or columns to rearrange pieces of data in your model. VisiCalc /// automatically keeps all formulas updated, as you move pieces of your worksheet around.

VisiCalc /// lets you quickly save entire worksheets as files on diskettes—including the data, formats, and location on the worksheet where the cursor was last positioned. VisiCalc /// data can also be saved by itself, without the worksheet, to be graphed or plotted by other Apple /// programs.

Any printer that works with the Apple /// can be used to produce a hard copy of your VisiCalc /// worksheet. You can print entire worksheets, or—by specifying column letters and row numbers—only selected parts of the data.

If your job frequently involves organizing and manipulating data to prepare budgets, schedules, forecasts, or tables of information,

VisiCalc /// can significantly increase your productivity and improve the overall quality of your planning.

System Configuration

To use VisiCalc ///, you will need:
- the Apple /// Information Analyst System (Option A, B, or C);

OR...
- any Apple ///;
- Apple /// Monitor;
- Silentype or letter-quality printer (optional).

Technical Specifications

Worksheet size:
63 columns by 254 rows.

Available Worksheet Memory:
Approximately 65K bytes available storage on 128K byte Apple ///.

Commands:

Blank Entry	Print Portion of Screen
Clear Sheet	Replicate Formula
Delete Row or Column	Load or Save Worksheet
Format an Entry	Initialize Disk
Set Global Format or Option	Delete Saved Worksheet
Insert Row or Column	Set Title Area
Move Row or Column	Split Screen

Functions:

Go To	Net Present Value
Delete Entry	Table Look-Up
Backspace Entry	Pi
Move To Other Window On Split Screen	Absolute Value
Add	Greatest Integer
Subtract	Exponent
Multiply	Square Root
Divide	Natural Log
Raise To Power	Base 10 Log
Sum	Sine
Min	Cosine
Max	Tangent
Count	Arc Sine
Average	Arc Cosine
	Arc Tangent

The VisiCalc /// Package (if purchased separately from the Information Analyst System) Order No. A3D0002

With your VisiCalc /// order, you will receive:
- VisiCalc /// diskette;
- VisiCalc /// manual;
- VisiCalc /// reference card;
- VisiCalc Toolkit Sampler Diskette (pre-written VisiCalc worksheets to help you get started);
- VisiCalc /// Toolkit Sampler manual.

Mail List Manager

Software

Professional Mail Lists And Labels At Your Fingertips

Apple's Mail List Manager program for the Apple III automates the tedious, time-consuming tasks of generating and maintaining the address and telephone listings of your customers, colleagues, prospects, and personal acquaintances. Designed for professional performance and ease of use, the program stores, sorts, edits, and prints mailing labels and phone lists in their entirety, or selectively by ZIP code, name, or special user-defined key.

Each Mail List Manager entry may contain up to five lines of information—enough to include a name, address, company name, and business phone number. As many as 916 entries can be stored on a single diskette, and any number of entries and diskettes may be merged to create a single, large mailing list.

Fast and sophisticated sorting is routine with Mail List Manager. You can sort mailing labels by name or ZIP code, and an entire diskette can be sorted in less than two minutes. You can even merge subsets of sorted lists to create new lists—for example, names from A to G only. And you can print letter-perfect mailing labels quickly and efficiently, too, saving hours of repetitive typing time.

If you're looking for a more convenient, flexible way to keep important names, addresses, and telephone numbers organized and at your fingertips, Apple's Mail List Manager for the Apple III is the ideal solution.

Benefits

Mail List Manager...

- *increases mailing list efficiency, because it stores, sorts, edits, and prints out labels at the touch of a few keys...*
- *requires no special training to use, because its menu and forms entry displays are simple and self-explanatory...*
- *increases your postal communications control, because it lets you sort and print mailing labels by name or ZIP code...*
- *speeds sorting, because a single diskette (holding information for up to 916 labels) can be sorted completely in only 90 seconds...*
- *extends your system flexibility, because its unique, user-assignable ID codes let you set up your own custom label selection without any programming.*

Mail List Manager—A Closer Look

After inserting the Mail List Manager program diskette into your disk drive and booting your Apple *III* system, your screen will display a title page, followed by the program's main menu. Two of the menu's options must be used before you can begin to create your mailing or telephone lists.

INITIALIZE A DISK. The Mail List Manager program diskette helps you create the lists you need, but is not intended for storage of those lists. You must prepare a blank, formatted diskette for that purpose. Select INITIALIZE A DISK from the main menu. On the screen, you'll see a display that explains, step-by-step, how to create the storage diskette.

CHOOSE DRIVE. Mail List Manager can be used with either a single or multiple disk drive system. (Note: To merge lists, a multiple drive system is required.) Once you have prepared a storage diskette, you must select the CHOOSE DRIVE option to identify the drive you'll be using to store your lists. This step is necessary whether you're using just one drive or several.

With your drive chosen, you're now ready to start creating lists. Menu option 3, ENTER MAILING LABELS, lets you simply "fill in" a form—the mailing label outline—item by item. Individual labels have

ample space for a person's name, company, address, city, state, ZIP code, and telephone number (including extension, if any). There are, in addition, two special line items, Name Key and Label Key, which can be extremely useful.

The Name Key is an eight-character name code under which each label is filed for sorting purposes. Mail List Manager automatically inserts the Name Key for you. For example, if the label is for John P. Jones, the program will insert "Jones" on the Name Key line. You have the option, of course, to change the Name Key if you wish. Suppose, for example, you want a list sorted by company names instead of individuals' names. You can change the Name Key from "Jones" to "XYZ Corp," for example, without changing the way the label will look when it's printed.

The Mail List Manager program recognizes that appellations such as "Jr." or "III" are not last names, even though they sometimes occur at the end of persons' names. In other words, if you're entering a label for John P. Jones III, the program will display "Jones," not "III," on the Name Key line.

The Label Key, six-characters in length, can be used to print sublists from a primary list. Suppose you have a large list of mailing labels, and you want to keep your customers separate from your suppliers. Simply type "cust" (or some other identifier) on the Label Key line for customers, and "supp" for suppliers. Later, you can instruct Mail List Manager to print separate mailing label lists by "cust" or "supp." You can fine-tune your mailing lists as much as you want, saving yourself time, postage, and perhaps even embarrassment!

Mail List Manager also provides a tab replication feature. When you're entering labels, pressing the TAB key on your Apple *III* moves the cursor to the next space in the label outline. There, the entry used for that item on the preceding label is displayed, and can be instantly replicated on your new label simply by tabbing again. This feature is especially helpful when creating a number of labels for persons in the same company, city, state, or ZIP code area.

After you've created a mailing list, you can make use of the remaining items on Mail List Manager's main menu. To locate a specific name on your list, select FIND A MAILING LABEL and enter (1) the exact name, or (2) a name phonetically similar to the one you're seeking, or (3) the particular sort order for that name (for example, all labels for names beginning with "Z"). Your screen will display a "window" through which you can view the label(s) you requested, plus the labels immediately preceding and following it. And the up and down arrow keys on your Apple *III* keyboard let you "scroll" your entire label list if you wish—that is, roll it forward or backward onto the screen.

To revise any information on a mailing label after locating it, select MODIFY MAILING LABELS from the program's main menu. Position the cursor on the line(s) to be changed and type the new information over the old. It's that easy.

Once you've made your revisions to the mailing list, select SORT MAILING LABEL DISK to sort your mailing labels, either alphabetically (by Name Key) or geographically (by ZIP code).

Set your printing parameters and specify the Label Key (if any) by choosing CHANGE PARAMETERS on the main menu. To print lists or labels, select LIST/PRINT LABELS. You can print all or part of a list, or only the names and phone numbers. Or you can display or review your entire label list—as it would appear if printed—on your monitor screen.

Mailing List Manager's last menu option, MERGE MAILING LABEL DISKS, allows you to merge separate lists together into one comprehensive list. In this way you can generate and print large numbers of mailing labels that span individual diskettes.

A second and third disk drive are necessary to take advantage of the powerful merge feature of Mail List Manager. Merging two lists on a three-drive system, (when each list fills a diskette), takes approximately 8-15 minutes. A list nearly filling nine diskettes (over 8000 names) takes slightly over an hour with a four drive system.

The Apple *III* Mail List Manager is a sophisticated mail list management program that gives you the kind of versatility and capacity you need to generate professional mailing labels for billing, direct mail, correspondence, or any other uses dictated by your business needs.

System Configuration

To use the Apple *III* Mail List Manager for mail lists of 916 labels or less, you will need:
- an Apple *III* system with 128K bytes RAM.

To use the Apple *III* Mail List Manager for mail lists that span volumes (i.e., those greater than 916 labels in length), you will need:
- an Apple *III* system with 128K bytes RAM;
- two expansion disk drives (Disk IIs for Apple *III*).

Technical Specifications

Field Sizes:

Field	Maximum Number of Characters
Name	40
Company	40
Address	40
City	40
State	11
ZIP Code	9
Phone (includes extension)	20
Label Key	6
Name Key	8
Max. Number of Characters per Label:	105 (sum of all label field entries)
Sort Keys:	By name, key, or ZIP code
Typical Sort Time:	90 seconds for 916 labels (1 diskette)
Typical Merge Time:	13 minutes for two lists, each list one diskette long
Max. Number Labels/diskette:	916

Printing Capabilities:

User-selectable printing or masking of the following:
- Telephone Number
- Label Code
- Name Key
- Zip Code

User-selectable formatting capabilities:
- maximum label line length
- maximum number of lines per label
- number of blank lines between labels
- left margin
- number of labels per row

The Apple *III* Mail List Management Package Order No. A3D0003

The Apple *III* Mail List Manager is supplied as a separate Apple product, as well as part of option A or B of the Word Processor package (order no. A3P0004 or A3P0005).

Word Painter

Software

Professional Word Processing With A Personal Touch

Available second quarter 1981

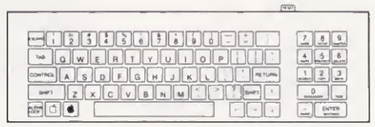
Apple's Word Painter software turns your Apple III computer into a powerful, personal word processing system. You can quickly compose, revise, and print all kinds of documents, from memos and brochures to form letters and entire, book-length manuscripts.

As you enter text, Word Painter shows you—on the screen—what your document will look like when it's printed. Centered lines, ragged left and right margins, tabs and indentations—they're all displayed, so that you can check document format at a glance. And Word Painter gives you complete control over printing, too, for letter-perfect documents every time.

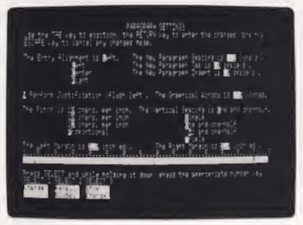
Paint your way out of paperwork corners, with Apple's powerful, easy-to-use Word Painter software for the Apple III computer. It's ushering in a whole new age of fast, clear business communications.

Benefits

Word Painter...
- *encourages fresh, creative approaches to communications by making it easy to experiment with different words, phrases, and writing styles...*
- *increases productivity by eliminating repetitive, inefficient routines such as retyping, replacing words, and centering lines...*
- *gives you an accurate picture of what your documents will look like when printed, because centered lines, ragged left and right margins, and tabs and indentations are all displayed as they're entered...*
- *saves time manipulating text with its powerful formatting, editing, and printing commands...*
- *simplifies document design and minimizes training with helpful "forms entry" displays...*
- *reduces the possibility of human error by signaling when you enter invalid commands*



Word Painter—A Closer Look



Because Word Painter works with a number of special keys on the Apple *III* keyboard, text editing is so logical and involves so few keystrokes that it almost becomes a natural reflex—like shifting from lower to upper case on a typewriter.

The four, dedicated cursor control keys move the cursor backward or forward (character by character), and up or down (line by line). Holding down any of the four keys auto-repeats its cursor movement. When the cursor moves past the top or bottom lines displayed on the screen, the text automatically "scrolls"—advances or backs up, as required—so that you can conveniently scan whole documents from beginning to end. Four grammatical keys on the Apple *III* keyboard let you position the cursor even more quickly and directly throughout the text—by word, sentence, paragraph, or page.

Some of Word Painter's most powerful word processing functions are provided through the use of two other keys, REPLACE and SELECT, on the Apple *III* keyboard. Using REPLACE (the key with the solid white Apple logo), you can delete text—by word—instantly. Or you can access the REPLACE mode—for one-over-one character replacement—to correct transpositions or minor misspellings.

The SELECT key is even more versatile. Using it, you can create a new document, revise a copy (without changing the original), revise the original document, protect a selected document from modification, delete a document from the diskette, print a document (either certain pages or the entire manuscript), or instantly "turn to" any page of the document you're working on.

Word Painter also features a number of special, Forms Entry displays accessed through the SET UP key on the Apple *III* keyboard.

These word processing aids make it easy for you to define and change any document's format, from the number of spaces between lines to the space reserved for left and right margins. You format your document by "filling out the form" displayed on the screen.

Whenever you're working on the text of a document, a four-line Status Display is present at the top of the screen, reminding you of various information, including left/right margin settings and page number. This is a handy reference which reminds you of the document format you've specified.

Word Painter also provides a number of powerful commands that let you quickly format, move, copy, and protect text. There's a separate key on the Apple *III* keyboard for each command.

Word Painter also features a powerful "search and replace" capability. Suppose that you've misspelled or misused a word throughout a document. Using the SEARCH and REPLACE keys on the Apple *III* keyboard, you can correct the misspelling or replace the word wherever it occurs—one instance at a time, or all at once and automatically.

Once a document is ready to be printed, Word Painter gives you a fine degree of control over the way it will finally look on paper. You can adjust all settings—margins, line spacing, etc.—quickly and easily.

And print functions such as underlining, bold printing, subscripting, or superscripting can all be specified wherever you like. Word Painter also lets you print selected pages of a report (readers see only what you want them to see), or as many as 999 copies of an entire document.

Whether you're a busy executive who needs closer control over written communications, or a beleaguered office administrator fighting the paperwork explosion, Apple's Word Painter software has been designed for you. It's the only professional word processing software with a personal touch.

System Configuration

Word Painter is already packaged with the Apple *III* Word Processor System. To use it with another Apple *III* configuration, you'll need the following:

- An Apple *III* with128K bytes RAM;
- Second disk drive (Disk II for Apple III);
- Apple *III* Monitor (black and white);
- Qume Sprint 5 daisy-wheel printer, with your choice of type fonts, for letter-quality printing; OR
- Apple Silentype Thermal Printer, for draft copy printing;
- Word Painter training course (Apple Product A3G0001), recommended.

Technical Specifications

Language:
Written in UCSD Pascal and Apple *III* assembly language.

Display:
12", high-resolution, video monitor, with up to 24 lines of 80 characters/spaces, and upper/lower case.

Storage:
Up to 60 standard pages of text per diskette.

Editing Functions:
Cursor Control—Cursor can be moved forward or backward one character, word, line, sentence, paragraph, or page at a time; or directly positioned to the page specified, or to the beginning or end of text.
Deletions—Deletes by character, word, sentence, paragraph, arbitrary block, page, or document.
Softkeys—SELECT key permits choice of seven functions: creating a new document, revising either original document or a copy, printing/protecting/deleting a selected document, and displaying any specified page. REPLACE key enables immediate deletion/replacement of text.
Search and Replace—Allows automatic or manual search and (if desired) replacement of user-specified "strings" or sequences of characters, words, phrases, or sentences (80-character maximum).
Marking—MARK highlights pieces and blocks of text (indicated in inverse video) that are to be protected, deleted, copied, or moved.

Move/Copy Block—MOVE key permits repositioning MARKed blocks of text within a document. COPY key allows MARKed blocks of text to be duplicated wherever desired within a document.
Protect Text—Allows user to protect portions of text from inadvertent or unauthorized deletions, replacements, and search-and-replace modifications; also prevents changing environmental settings for protected text.
Tabs—Left tabs work like a typewriter's; right tabs shift text to the left, leaving text flush at right tab point. Center tabs automatically center text, centering as each character is entered. Also, a special decimal tab automatically stacks columns of numbers so that their decimal points line up directly under each other.
Margins—Top, bottom, left and right margins are set by user, and left/right margins may be changed at any paragraph boundary.
Form Letter Production—Special merge codes allow users to produce form letters automatically, inserting either blocks or phrases of personalized copy at any designated points.
Disk Access—Allows user to catalog, store or save files to the diskette. "Save-to-disk" process is triggered automatically when pressing MASTER key.

Environmental Functions:
Settings—SETUP key enables users to access and change text settings (margins, tabs, spacing, underlining, etc.) for as little as a single character or as much as an entire document. SHOW key reveals otherwise unseen settings by highlighting them.
Document/Page—Allows user to specify, change, and refer to such settings as paper size and space left blank for letterhead, headings, footings, and page numbers.
Paragraph—Permits initial (global) and modified (local) settings for paragraph spacing, tabbing, and indenting, as well as left and/or right justification and centering of text.

Printing Functions
Characters—Users can underline, bold face, superscript and/or subscript any character in a document. Also either 10, 12, or proportional justification can be specified.
Justification—Users can set text either to be centered, or fill-, right-, or left-justified—by paragraph, page or document.
Vertical Spacing—Permits single, one and one-half, double, triple, and quadruple spacing between each line of text. Also, graphical "windows" (contiguous blank areas) can be reserved in the text. If less than a page, the windows never cross page boundaries, and if more than a page, they always start at the top of the next page.
Final/Draft/Partial Printouts—Final printout calculates all page breaks so as to avoid "widows" and "orphans." Draft printout leaves page breaks identical to those displayed on screen, providing quicker direct access and correspondence between the page numbers of a previously printed draft copy and the modified version of the document. Partial printout permits starting/ending on any specified pages.
Copies—Up to 999 copies of the requested document can be printed. Parts of documents may be printed by starting printing on any page specified.
New Page—Allows user to specify when a new page should be started.
Paper—Settings provides for use either of continuous fan-fold or single-sheet paper.

The Word Painter Package (if purchased separately from the Word Processor System) Order No. A3D0001

With your Word Painter order, you will receive:

- Word Painter program diskettes;
- Detailed Word Painter manual;
- Sample Word Painter diskette.

Apple Pascal

for Apple II/II Plus Computers

The Powerful, Flexible Language

Apple Pascal is a fully professional system development environment. It incorporates the UCSD Pascal™ Operating System (Version 2.1), with enhancements for color graphics, sound generation, and Apple's special input/output features. Because it offers a compiled language, the Pascal system allows programs to execute more quickly and to take up less space than they would in BASIC. The structured programming facilities and extensive data structures in Pascal make it the language to choose for large business, scientific, and educational programs.

Benefits

Apple Pascal...

- *increases programmer productivity because it provides a total software development facility...*
- *simplifies program design through Pascal's convenient structural mechanisms and rich variety of data types...*
- *lowers development costs, as extended built-in error checking routines catch syntax, type and range errors...*
- *lowers maintenance costs because Pascal's block structure minimizes convoluted code which is difficult to understand and modify...*
- *allows programs larger than available RAM to run, through the use of memory overlays...*
- *allows documentation, as well as program source code, to be written and modified through the utilization of a powerful, easy-to-use editor...*
- *supports Apple's special graphics and sound capabilities, plus control paddles, through system library routines...*
- *is the most transportable of all languages; it allows access to large libraries of Pascal programs and provides the capability to run your own programs on most Pascal systems...*
- *offers a performance increase of two to five times over equivalent BASIC programs.*

Apple Pascal—A Closer Look

Apple Pascal has been designed for the sophisticated programmer or computer science student. Its richness of data types, control functions, and powerful utility routines can dramatically improve a programmer's productivity on large projects. For this reason, Apple has selected Pascal as its standard system and applications development vehicle.

Why UCSD Pascal?

Since UCSD Pascal is recognized as the microcomputer industry standard, using it as a basis for Apple Pascal gives a programmer portability. Not only can a user access large libraries of Pascal programs already in existence, Apple Pascal programs can run with minimum conversion on most computer systems offering Pascal.

UCSD Pascal is more than a language: compiler, assembler, editor, linker, and file handler are integrated within a single, powerful system. This provides the user with a comprehensive set of software tools for optimal program development. Built-in procedures and functions enhance the string, byte, and I/O capabilities. Both 36-digit integers and 32-bit floating point are supported.

™"UCSD PASCAL" is a trademark of The Regents of The University of California. Use thereof in conjunction with any goods or services is authorized by specific license only and is an indication that the associated product or services has met quality assurance standards prescribed by the University. Any unauthorized use thereof is contrary to the laws of the State of California.

Why Apple Pascal?
Apple has taken advantage of all of UCSD Pascal's capabilities and can offer others as well. These include:
- easy access to Apple's human interface features: color graphics, speaker, control paddles, and keyboard;
- transcendental functions;
- faster disk response and transfer rates;
- extensive documentation.

System Configuration

To use the Apple Language System with Apple Pascal, you will need the following system:
- Apple II or Apple II Plus, each with 48K of memory;
- Apple Disk II with controller* (a maximum of six drives are supported);
- video monitor or television.

*While a single drive system is adequate for very small programs, two drives are strongly recommended for ease of operation and more serious program development.

Technical Specifications

Diskettes:
16 sector format

Editor:
Editing functions include cursor control, text modification, formatting, searching and marking capabilities. The Editor offers:
- fast, screen-oriented editing for program development and text editing;
- 80-character lines (upper/lower case) available with external CRT terminal;
- 80-character lines supported in standard Apple using horizontal scrolling.

Editor Commands:

JUMP	ZAP	SET ENVIRONMENT
PAGE	VERIFY	AUTO-INDENT
WRITE	QUIT	FILLING
FIND	UPDATE	LEFT MARGIN
INSERT	EXIT	RIGHT MARGIN
REPLACE	RETURN	PARAGRAPH MARGIN
DELETE	ADJUST	COMMAND CHARACTER
XCHANGE	MARGIN	TOKEN DEFAULT
COPY	SET MARKER	

Compiler:
- Pascal source text is translated into P-code.
- A group of one or more source language procedures or functions can be compiled separately as a UNIT, allowing a large program to be subdivided into smaller, more manageable parts. Commonly used procedures and functions can be compiled once, stored in a library file, and accessed by other programs through the Linker.
- EXTERNAL routines can be declared and are later linked into the host program by the Linker.
- Compiler option specifications can be embedded in the source text to control listings, screen messages, range-checking, inclusion of separate source files, and other compiler parameters.

Compiler Options:

C	Following characters are placed directly into codefile.
G+	Allows GOTO statements.
G–	Forbids GOTO statements.
I+	Generates I/O checking code.
I–	No I/O checking.
Ifilename	Includes named source file in compilation.
L+	Sends compiled listing to SYSTEM.LST.TEXT.
L–	Makes no compiled listing.
Lfilename	Sends compiled listing to named file.
P	Pages listing.
Q+	Suppress screen messages.
Q–	Sends procedure names and line numbers to CONSOLE:.

R+	Generates range-checking code for array subscripts and variables.
R–	No range checking.
S+	Puts compiler in swapping mode.
S++	Compiler does even more swapping.
S–	Non-swapping mode: entire Compiler in memory.
U+	Compiles on user lex level.
U–	Compiles on system lex level.
Ufilename	Specifies name of library file for finding UNITs.

6502 Assembler:
- Permits relocatable assembly language routines to be generated for linking to Pascal programs.
- Supports parameterized macros.

Assembler Directives

Delimiting Directive for Routines:
.PROC
.FUNC
.END

Label Definitions and Space Allocation Directives:

.ASCII	.EQU
.BYTE	.ORG
.BLOCK	.ABSOLUTE
.WORD	.INTERP

Macro Facility Directives:
.MACRO
.ENDM

Conditional Assembly Directives:
.IF
.ELSE
.ENDC

Pascal Host Communication Directives:
.CONST
.PUBLIC
.PRIVATE

External Reference Directives:
.DEF
.REF

Listing Control Directives:

.LIST	.PATCHLIST
.MACROLIST	.NOPATCHLIST
.NOLIST	.PAGE
.NOMACROLIST	.TITLE

File Directive:
.INCLUDE

Linker:
- Combines compiled P-code or assembled machine code files into the system work file or another specified code file. This eliminates the need to recompile or reassemble existing code files when incorporating them into a program.
- Supports segmentation at the P-code level, allowing procedure or function code to be swapped in and out of memory.
- Resolves references in compiled code to UNITS or EXTERNAL routines before program execution.

Filer:
- Handles the tasks of transferring information, i.e., storing and retrieving data on disk, moving and deleting disk files, creating and modifying diskette directories.
- Reports the location of files on diskette and what devices and diskettes are available.

Filer Commands:

GET	EXTENDED DIRECTORY LIST	KRUNCH
SAVE	REMOVE	MAKE
NEW	TRANSFER	ZERO
WHAT	DATE	QUIT
VOLUMES	PREFIX	XAMINE
LIST DIRECTORY	BAD BLOCKS	CHANGE

System Utilities Include:

- Desk calculator—performs simple calculations: addition,subtraction, multiplication, division.
- Disk formatter—prepares new disk for use with the Apple Pascal system.
- System librarian—organizes separately compiled or assembled routines into a library file.

System Library Contains:

- The "Turtlegraphics" code unit, which provides easy access to Apple's High Resolution color graphics routines. Functions and procedures permit the user to choose a color, move and turn the cursor, specify viewport boundaries, fill the viewport with color, copy an array of data to the screen from memory, write text on the graphics screen, and interrogate the system regarding the state of the cursor and screen. It adds the following procedures and functions:
INITTURTLE, TEXTMODE, GRAFMODE, VIEWPORT, PENCOLOR, PENMODE, SCREENCOLOR, FILLSCREEN, MOVETO, TURNTO, TURN, MOVE, TURTLEX, TURTLEY, TURTLEANG, SCREENBIT, DRAWBLOCK, WCHAR, WSTRING, CHARTYPE.
- The "Applestuff" code unit, which contains routines to generate random numbers, interfaces with the control paddles, and generate sounds on the Apple's speaker. It adds the following procedures and functions:
RANDOM, RANDOMIZE, PADDLE, BUTTON, TTLOUT, NOTE, KEYPRESS.
- The "Transcend" code unit, which contains transcendental functions useful for mathematical calculations. It adds the following functions:
SIN, COS, ATAN, EXP, LN, LOG, SQRT.

Implementation Size Limits

The following is a list of maximum size limitations in the current implementation of UCSD Pascal:

- Maximum number of bytes of object code in a PROCEDURE or FUNCTION is 1200. Local variables in a PROCEDURE or FUNCTION can occupy a maximum of 16383 words of memory.
- Maximum number of characters in a STRING variable is 255.
- Maximum number of elements in a SET is 32 • 16 = 512.
- Maximum number of SEGMENT PROCEDUREs and SEGMENT FUNCTIONs is 16. (Six are reserved for the Pascal system, ten are available for use by the user program.)
- Maximum number of PROCEDUREs or FUNCTIONs within a segment is 127.

The Apple Pascal Package (Apple Language System) Order No. A2B0006

With your Apple Pascal order, you will receive the Apple Language System, which includes:

- Apple Language Card with 16K bytes of RAM;
- Six (6) diskettes, including Pascal System (4), Integer BASIC and Applesoft Extended BASIC (1), and one blank;
- IC puller;
- Three (3) Pascal manuals;
- Apple Language System Installation and Operating Manual;
- Apple II BASIC Programming Manual;
- Applesoft II Tutorial Manual;
- Applesoft II BASIC Programming Reference Manual;
- Two (2) 16 sector Disk Controller PROMS, P5A and P6A.

Apple PILOT

Courseware Development System

Language Library and Utilities

Apple PILOT is a powerful, easy to use system designed to support program development for Computer-Assisted-Instruction (CAI). If you're familiar with the PILOT language, you'll quickly become proficient in developing Apple PILOT courseware—and at a fraction of the cost of most other systems.

Based on COMMON PILOT, Apple PILOT offers much more than simple language capabilities. Color graphics, sound effects, and a character set editor allow lessons to be presented in words, pictures and sounds.

Benefits

Apple PILOT...

- *significantly heightens students' interest and retention through its graphics, animation and sound effects capabilities...*
- *allows educators to share material in creating new and different lessons, because libraries of pictures, sounds, character sets, and PILOT routines can be saved on diskettes...*
- *may be learned quickly by anyone familiar with the PILOT language, because it is menu-driven and provides HELP screens...*
- *gives instructors access to large libraries of material, because programs written in PILOT 73 and COMMON PILOT may be run on the Apple system...*
- *provides the capability of recording both student lessons and grades on the same diskette, because the author can programmatically create files for general purpose record keeping...*
- *places no restriction on lesson length, since a single lesson may span many files and/or diskettes...*
- *helps evaluate student performance by timing individual student responses...*
- *assists in foreign language instruction, because character sets in different languages can be developed easily...*
- *allows educators to make hardcopy files of lesson text through a built-in print routine.*

Apple PILOT—A Closer Look

Apple PILOT operates in two modes—Author and Lesson. In Author Mode, the instructor/designer creates lessons and stores them on a lesson diskette. The student then uses that diskette to "take a lesson," that is, interact with the computer as specified by the teacher.

In Author mode, menus and HELP screens direct and assist in creating a lesson. The main menu provides the following options:

Initialize a Diskette—Automatically formats a diskette and copies from the Author diskette certain required system programs and files.

Create/Edit PILOT Lesson Text—PILOT is a high level language particularly suited to the needs of courseware developers. It is the heart of the system. Using simple commands, the author defines the flow and logic of a lesson and integrates any previously defined graphics, sound effects, and special characters into that lesson. The lesson can also be tested by using the RUN option.

Create/Edit Graphics—The author can create high-resolution color graphics to include anywhere in the lesson(s). Simple keyboard commands draw lines, circles and rectangles; or the control paddles can be used to sketch free form designs. Text may be written anywhere on the graphic screen. These "pictures" are stored on diskette.

Create/Edit Sound Effects—Music/sounds can be dynamically created and played back using simple menus and keyboard commands. The sounds are stored on diskette for inclusion in any lesson.

Create/Edit Character Sets—User-defined characters are simply "drawn" on a grid using keyboard commands or control paddles. These special characters can be associated with any Apple keyboard printing characters.
Copy a Lesson Diskette—allows the author to make multiple copies of a lesson diskette for wide distribution or concurrent use by students.

In Lesson Mode, the student merely inserts a lesson diskette into a disk drive and is presented with the material as specified by the author/teacher.

System Configuration

To use Apple PILOT, you will need the following system:
- Apple II or Apple II Plus, with 48K of memory;
- One Apple Disk II drive with controller for Lesson Mode; or two Disk II drives, one with controller, for both Author and Lesson Modes. No more than two drives are supported.
- DOS 3.3 or the Apple Language System, each with 16-sector state and boot PROMS;
- Video monitor or television.

Optionally, if lessons are to be printed, a compatible printer and printer controller card are required. The Apple Computer System works with several printers and appropriate controller cards, including those specified below:
- Apple Silentype Printer
  Card: Silentype Interface Card (supplied with printer)
- Centronics
  Card: Centronics Printer Interface Card (Apple Product A2B0007)
- Printronix
  Card: Parallel Interface Card (Apple Product A2B0002)
- Qume Sprint 5, Diablo Hyterm, and NEC Spinwriter 5510R
  Card: High Speed Serial Interface Card (Apple Product A2B0005) with P8-02 PROM

Technical Specifications

Language:
Written in Pascal; however the Apple Language System is not required to run Apple PILOT.

Diskettes: 16-sector format

Commands:
Apple PILOT includes all of the following standard COMMON PILOT commands:

A:	Accept	FO:	File Output	T:	Type
AS:	Accept Single	G:	Graphics	TH:	Type and Hang
C:	Compute	J:	Jump	U:	Use
D:	Dimension	M:	Match	XI:	Execute Indirect
E:	End	PR:	Problem		
FI:	File Input	R:	Remark		

In addition to providing all of the COMMON PILOT commands and facilities, Apple features the following extensions:

AP:	Accepts point on graphics screen.
FIX:n,var$	Opens diskette file <var$> for input and/or output with <n> records.
FOX:n,var$	Creates new diskette file <var$> with <n> records.
G: C n	Sets pen color to <n>.
G:ES n	Erases the graphics screen color to <n>.
G:T	Prints text at the graphic cursor position.
G:Vl,r,t,b	Sets graphic viewport coordinates.
GX:name	Draws previously defined graphic image <name> onto the screen.
L:name	
L:name, label	Links to PILOT lesson <name>, optionally at the specified point <label>.
PR:T nnn	Sets accept response time in seconds.
S:p,d	Generates a sound of pitch <p> for duration <d>.
SX:name	Plays previously defined sound effect <name>.
TX:name	Types output and accepts input using previously defined character set <name>.
W:nnn	Waits <nnn> seconds.
X = BTN(n)	Returns push button status.
X = KEY(0)	Returns keyboard status.
X = PDL(n)	Returns control paddle position.
X = RND(0)	Returns a random number between zero and one.
X = TIM(0)	Reads accept response time.

The Apple PILOT Package Order No. A2D0028

With your Apple PILOT order, you will receive:
- Write-Protected copy of the Apple PILOT Author Diskette;
- Apple PILOT Language Reference Manual;
- Apple PILOT Editors Reference Manual.

Apple FORTRAN

For the FORTRAN Programmer

Language Library and Utilities

FORTRAN is a powerful programming language, especially suitable for work in mathematics, engineering and the sciences. Apple FORTRAN, usable with the Apple Language System, is the ANSI Standard Subset of the recently-defined FORTRAN 77 standard; in several areas, Apple FORTRAN contains enhanced features and capabilities.

Apple is providing FORTRAN for use by technical professionals and educators who are both familiar with the FORTRAN language and are using packages written in FORTRAN. Because FORTRAN is a well-established language, large libraries of FORTRAN programs are already in existence, particularly for engineering and scientific applications. Apple FORTRAN provides the sophisticated FORTRAN user with the capability to develop new and modify existing FORTRAN programs on an Apple.

Benefits

Apple FORTRAN...
- *offers enhanced features and capabilities because it supports the newest computer industry standard, ANSI X3.9-1978...*
- *operates in the Apple Language System, which provides a comprehensive software design environment including an editor, linker, file handler, assembler, Apple Pascal compiler, and system library...*
- *eliminates the need to recompile or reassemble existing code files when incorporating them into FORTRAN programs; compiled P-code and assembled machine code can be combined with a FORTRAN P-code file through the Apple Language System's linker facilities...*
- *allows you to take full advantage of Apple's Hires graphics capabilities by interfacing to graphics routines in the system library...*
- *gives programmers access to large libraries of material, since FORTRAN is a familiar, well-established language...*
- *provides access to special Apple features,such as sound generation and control paddles,through its system library routines...*
- *permits you to combine several source files in a single compilation through compiler directives in the source code.*

Apple FORTRAN—A Closer Look

First, Some Words About FORTRAN '77
FORTRAN 77 contains significant additions and enhancements to the previous 1966 standard. For example, mixed-mode arithmetic expressions are allowed. Structured programming is supported through expanded IF statement constructs. Logical IF, Block IF, ELSE IF, ELSE, and END IF statements provide a vastly improved method of clearly and accurately specifying the flow of program control. CHARACTER data type replaces Hollerith; alphanumeric data can be represented as strings rather than array elements.

Some Specifics About Apple FORTRAN
Apple FORTRAN is the ANSI Standard Subset FORTRAN 77. It also supports enhancements and facilities from the full FORTRAN 77 language. In particular:
- Subscript expressions may include array elements and function calls.
- DO statement limits may be defined by expressions, rather than just single variables.
- I/O units may be specified by expressions, rather than just constants or simple variables.
- The I/O list of a WRITE statement may include expressions.

■ All combinations of FORMATTED/UNFORMATTED and SEQUENTIAL/DIRECT files are allowed, with the following restrictions:
—BACKSPACE is supported only for files connected to the blocked devices; it is not supported for UNFORMATTED SEQUENTIAL files;
—DIRECT files must be connected to block devices.

Apple FORTRAN contains a number of enhancements beyond the full FORTRAN 77 specifications. In particular:

■ Compiler directives may be included in the source code. For instance, the $INCLUDE directive allows you to insert previously-developed code into your program without having to repeat the code. This is useful, for example, when you are writing many subroutines which use the same COMMON block. You can write the COMMON block just once, and $INCLUDE it in every subroutine.

■ An additional parameter to the OPEN statement allows you to specify whether the file is blocked or unblocked.

There are two minor differences between the ANSI Standard Subset FORTRAN 77 and Apple FORTRAN. They are:

■ Subprogram names cannot be passed as parameters.

■ INTEGER and REAL data types have different storage requirements—two bytes for INTEGER, four bytes for REAL.

System Configuration

To use Apple FORTRAN, you will need:

■ Apple II or Apple II Plus with 48K of memory;

■ Apple Language System;

■ video monitor or television.

*While a single drive system is adequate for very small programs, two drives are strongly recommended for ease of operation and more serious program development.

Technical Specifications

Apple FORTRAN is written in Pascal and produces P-code which runs in the Apple Pascal Operating System.

Diskettes: 16 sector format

The standard library of intrinsic functions supplied with Apple FORTRAN includes:

ABS	AMOD	EOF	LGE	NINT
ACOS	ANINT	EXP	LGT	REAL
AINT	ASIN	FLOAT	LLE	SIGN
ALOG	ATAN	IABS	LLT	SIN
ALOG10	ATAN2	ICHAR	MAX0	SINH
AMAX0	CHAR	IDIM	MAX1	SQRT
AMAX1	COS	IFIX	MIN0	TAN
AMIN0	COSH	INT	MIN1	TANH
AMIN1	DIM	ISIGN	MOD	

The Apple FORTRAN Package Order No. A2D0032

With your Apple FORTRAN order, you will receive:

■ Two FORTRAN system diskettes;

■ Apple FORTRAN Language Reference Manual.

Applesoft and Integer BASIC

Language Library and Utilities

How to Program An Apple Without Really Trying

When you purchase an Apple II or Apple II Plus computer, you buy more than hardware—you receive a built-in programming system as well. This "firmware" makes it easy to create interesting and useful programs, even if you've never programmed before. In the Apple II computer, the resident firmware is Integer BASIC; in the Apple II Plus, it is Applesoft Extended Floating Point BASIC, or Applesoft for short. Both Integer BASIC and Applesoft are versions of the very popular BASIC programming language.

Both Integer BASIC and Applesoft come with easy-to-follow tutorial manuals that start you doing useful work with your Apple right away.

Benefits

Integer BASIC and Applesoft...

■ *allow you to take advantage of large libraries of existing programs because both are very popular languages...*

■ *permit critical portions (e.g., graphics animation) of programs to be run at high speed, because both allow direct access to assembly language subprograms...*

■ *turn your Apple into a desktop calculator because both automatically perform arithmetic computations (add, subtract, multiply, divide, raise to a power)...*

■ *allow you to modify and store data for repeated use, because both accept input/output operations from the keyboard, video monitor or television, disk drive, and other peripheral devices...*

■ *provide you with greater flexibility in conveying information, because both will create dots and horizontal and vertical lines on the screen...*

■ *allow you to quickly and easily change or correct any part of a program because both accept editing commands...*

■ *save you time in locating programming errors, because both give immediate feedback if an error exists and provide its location.*

Applesoft and Integer BASIC—A Closer Look

Applesoft II Floating Point BASIC language, resident in Apple II Plus computers, is an expanded version of Microsoft's popular floating point BASIC. It is a fast, convenient, general purpose language. Applesoft's 9-digit arithmetic and large function library make it ideal for the majority of BASIC programming applications. Features like high resolution graphics routines and user-programmable error messages make the language both powerful and friendly.

Integer BASIC, resident in Apple II computers, is a subset of standard BASIC. It is well suited to writing games, because its high performance makes realistic animation possible. It is not generally suitable for business or scientific applications, since it works only with integers (whole numbers).

A Special Note to Non-Programmers

Have you ever purchased a product advertised as "so simple to use even a child can do it," only to discover that it was neither simple nor child's play? This is not the case with Applesoft or Integer BASIC. All you need to use either language is an interest in programming. Apple's comprehensive tutorial manuals will provide the rest. As you progress, you'll learn to speak a BASIC language to your Apple, create new applications, and become familiar with programming terminology. Before you know it, you'll be writing programs for your Apple.

For Those Already Familiar with Programming
There is one fundamental difference between Applesoft and Integer BASIC. Integer BASIC deals only with integer values in the range ±32,767. Applesoft, in addition to dealing with those same integer values, is also capable of manipulating floating point (real) quantities. Its range is approximately ±10 to the 38th power, with 9-digit precision. Additionally, Applesoft offers built-in trigonometric, transcendental, and other mathematical functions ideal for financial and scientific calculations. Applesoft can also handle multi-dimensional arrays (up to 88 dimensions, both numeric and string), while Integer BASIC recognizes only single-dimension arrays.

System Configuration

If you own an Apple II, Integer BASIC is resident within the system. To run Applesoft BASIC on your Apple II, you will need either:
- an Applesoft Firmware Card, or
- the Apple Language System.

If you own an Apple II Plus, Applesoft BASIC is resident within the system. To run Integer BASIC on your Apple II Plus, you will need:
- an Integer BASIC Firmware Card, or
- the Apple Language System.

Technical Specifications

Applesoft BASIC
Applesoft BASIC capabilities include:
- Three data types—Real, Integer, and String
- N-Dimensional Arrays and N-Letter Variable Names (first two letters significant)
- Extensive Mathematical, Logical and Scientific Capabilities:
  EXP, LN, SQ RT., SIN, COS, TAN, ARCTAN, AND, OR, NOT, ABS, INT, RND, SIGN
- String Operations to Aid the Business Programmer:
  Compare >, <, >=, <=, <>
  Concatenate: +
  Variable Type Conversion: ASC, STR, VAL
  Substring Functions: LEFT, RIGHT, MID, LEN
- Graphics Statements that Simplify Display Programming:
  Print Control: NORMAL, INVERSE, FLASH
  Graphics Control: COLOR, PLOT, POSN, HLIN, VLIN, SCRN, GRAPHICS, TEXT, HGR, ROT, SCALE, SHLOAD
- General Operations that Include and Extend Upon Dartmouth BASIC:
  Program Manipulation: CLEAR, NEW, LIST, RUN, CONT, LOAD, SAVE
  Variable and Function Definition: DATA, DEF, DIM
  Data Handling and Storage: READ, RESTORE, STORE, RECALL
  Loops and Branching: FOR...NEXT, IF...GOTO, IF...THEN, ON...GOTO, ON...GOSUB, ONERRGOTO, RESUME, GOTO, GOSUB, RETURN
  Input/Output and Format Control: INPUT, GET, PRINT IN #, PR#, VTAB, TAB, HOME
  Machine Level Statements: PEEK, POKE, CALL, POP, LOMEM; HIMEM

Integer BASIC
In addition to normal BASIC capabilities, Apple Integer BASIC includes:
- Any-length variable names (ALPHA, BETA$) (all characters significant)
- Syntax and range errors indicated immediately when entered
- Multiple statements on one line
- Integers from −32767 to +32767
- Strings to 255 characters; single-dimension integer arrays
- Graphics Commands
- Paddle read function
- TEXT and Graphics Commands to set display mode from BASIC
- Immediate execution of most statements
- Break and Continue program execution
- Debug commands: line number trace and variable trace
- Switchable I/O device assignments
- PEEK, POKE, CALL, POP commands
- Auto line number mode
- RND, SGN, ASC, LEN and ABS functions
- GOTO expr, GOSUB expr allowed

The Applesoft BASIC Package

With your order for an Apple II Plus computer, you will receive:
- Applesoft BASIC language resident within the system;
- Applesoft II Tutorial Manual;
- Applesoft II Basic Programming Reference Manual.

The Integer BASIC Package

With your order for an Apple II computer, you will receive:
- Integer BASIC Language resident within the system;
- Apple II BASIC Programming Manual (Tutorial).

Note: If you purchase the Apple Language System (Pascal), both Applesoft and Integer BASIC languages and manuals are included.

DOS Toolkit

Software

Selected Aids For The Apple II Programmer

Apple's DOS Toolkit is a collection of programs and subroutines designed to aid the Apple II user in the development of Applesoft BASIC and 6502 Assembly Language programs. The Toolkit simplifies program development by providing a number of handy features that make programming easier.

Included are an assembler and source editor for use under DOS on Apple II or Apple II Plus systems, as well as an assembly language program that renumbers, merges, and deletes remarks from Applesoft BASIC programs. In addition, there are two special high resolution graphics programs in the Toolkit—one that helps you create and edit high resolution character sets, and another that lets you display characters on the high resolution graphics screen. Also included are three graphics demo programs, and character sets for editing high resolution characters.

If you're a programmer familiar with Applesoft BASIC and/or machine language, Apple's DOS Toolkit contains a number of unique programming aids that will prove invaluable to you.

Benefits

Apple's DOS Toolkit...
- *reduces programming time, by providing the user with such powerful program editing capabilities as character search, line search, and string replace...*
- *allows the user to assemble arbitrarily large source files, because its disk-based operation requires that only the symbol table be held in RAM...*
- *makes the assembler easier to learn, since it is fully compatible with 6502 syntax...*
- *increases programming flexibility, because its text files feature provides a degree of compatibility with other assemblers...*
- *simplifies the creation of relocatable modules by providing the user with a relocating loader...*
- *speeds program development, because its multiple applications assist users in accomplishing many time-consuming and difficult programming tasks...*
- *aids in the design of high-resolution graphics characters through the use of a special graphics editor.*

The DOS Toolkit—A Closer Look

The four programs and subroutines that make up the DOS Toolkit were designed to meet a variety of programming needs.

The Editor/Assembler is an integrated assembler and source editor designed for the creation of 6502 assembly language programs. After accessing the Editor/Assembler from the Toolkit diskette, you can create and edit source code files in RAM; store and retrieve programs as text files; assemble disk source files into disk object files; and create your own symbol table summary. The Editor/Assembler program also features relocatable or absolute code output, as well as a relocating loader.

The Hi-Res Character Generator is an assembly language program for displaying text on the high-resolution graphics screen. Using the Generator, you can mix text with high-resolution graphics; write text over an existing background; automatically downshift alphabetic characters for displaying lower case text; and animate figures. The Generator also allows alternate character sets for user-defined characters, and features a text wrap-around within the text window. Additionally, it provides examples of graphic implementation through three graphics-oriented demos and several alphabetic fonts.

Animatrix (Character Editor) is a special Applesoft BASIC program which makes it easy for you to create and edit character sets for the Hi-Res Character Generator.

Applesoft Programmer's Assistant is an assembly language program that helps you write your own programs in Applesoft BASIC. The Assistant can determine program length, renumber and merge several programs, and delete remarks. Its automatic line numbering feature makes program entry easier, and—since it allows you to cross reference variables—takes some of the confusion out of programming. The Assistant also provides you with the use of three, non-standard keys: underscore, left bracket, and backslash. In addition, it will print non-visible characters when listing a program.

System Configuration

To use the DOS Toolkit, you will need:
- Apple II (with Applesoft Firmware Card) or Apple II Plus, each with 48K of memory;
- Apple II or Apple II Plus with the Apple Language System;
- Apple Disk II with controller and 16-sector PROMs;
- video monitor or television.

Technical Specifications

Language:
DOS Toolkit is written in Applesoft BASIC and Machine Language.

The DOS Toolkit Package
Order No. A2D0029

With your DOS Toolkit order, you will receive:
- DOS Toolkit diskette;
- 6502 Assembler/Editor Instruction Manual;
- Applesoft Toolkit Instruction Manual.

Apple Business BASIC

Apple *III*'s Advanced BASIC For Business Applications

Language Library and Utilities

Apple Business BASIC for the Apple III Computer System is one of the most powerful versions of BASIC ever developed for a microcomputer. Designed for those who want the flexibility, power, and ease-of-use of the popular BASIC language, Apple Business BASIC incorporates a number of innovative features which can be used to satisfy some of the most demanding business and scientific programming needs.

With Apple Business BASIC, programmers can address over 70K bytes of extended memory—the largest workspace available on any personal computer. In addition, Apple Business BASIC's special 64-bit, 18-digit data type handles the toughest accounting chores with "penny accuracy."

For producing reports, Apple Business BASIC offers some of the most comprehensive and flexible formatted output capabilities found on any version of BASIC—even those used on large system mainframes. Apple Business BASIC also features advanced file handling, with flexible file formats to match application needs; 16-bit binary integer, and 32-bit binary floating point data types; 64-character variable names (all characters significant) for documentation purposes; easy access to a wide variety of plug-in peripherals or auxiliary devices; and a trace mode for debugging.

If you prefer programming in BASIC, but require more power, flexibility, and precision than most BASICs can give you, turn to Apple Business BASIC for the Apple III—an advanced language for an advanced computer system. Apple Business BASIC is supplied with all Apple III system configurations.

Benefits

Apple Business BASIC...
- *makes it easier to generate reports, because of its flexible, extensive, formatted output capabilities, and versatile PRINT USING and IMAGE statements...*
- *increases system efficiency, because its large, user-available workspace (over 70K bytes) allows lengthy programs to be kept in memory...*
- *adds programming flexibility, because it lets you keep multiple (up to 10) files open simultaneously, with virtually no size constraints...*
- *allows you to display and calculate financial accounting data with "penny accuracy," through the use of a 64-bit, 18-digit data type and special functions...*
- *speeds up disk file storage, because its built-in facilities let programs read and write files more efficiently...*
- *simplifies system input/output (I/O) control, because just a few key words let you control a wide variety of peripherals, as well as machine language routines and graphics facilities...*
- *aids development and debugging of complex programs, because its optional ELSE statement and automatically indented listings encourage a structured approach to programming.*

Apple Business BASIC—A Closer Look

Apple Business BASIC is a general-purpose, problem solving language, designed especially for business and scientific applications calling for: 1) an easy-to-use debugging environment; 2) fast, high precision operations—such as accounting—on numbers with a range less than $\pm 10^{18}$; 3) a high degree of output formatting for printing reports; and 4) greater flexibility for file I/O operations. Apple Business BASIC's powerful features provide the programmer with a number of advanced capabilities and conveniences.

Extended User Program Memory Space
In an Apple *III* Computer System with 128K bytes of RAM, Apple Business BASIC presents you with a huge, 70K byte workspace—more than is available with any other personal computer BASIC. This means you can write large programs more easily and run them more efficiently. Access time is reduced, because large files can be kept in memory—instead of on disk—and because many files can be opened for access simultaneously. In addition, large, high-resolution graphics areas can be used without fear of unduly restricting program size.

Flexible Output Formatting
Apple Business BASIC's versatile PRINT USING and IMAGE statements allow you to use a variety of format strings to prepare reports. Specifications are extremely flexible, and include string, literal, digit, scientific notation, and engineering notation categories.

Advanced File Handling
In Business BASIC, file handling is done through numbered file references defined within the program. You can make these file definitions perform chores simply by using generic terms. To print, for example, call out the generic term ".printer" within the program. Apple Business BASIC works with the Apple *III*'s Sophisticated Operating System (SOS) to handle the details automatically, including which printer you're addressing (if your system has more than one), its I/O address, etc. For greater user convenience, disk files are referenced by directory, sub-directory, and file name, without regard to the storage device on which the file resides.

Long Variable Names
Apple Business BASIC allows you to use variable names (up to 64 characters in length) for documentation purposes, with each character significant. Furthermore, because spaces are used as delimiters, embedded BASIC keywords are allowed in variable names, permitting even more flexibility.

"Structured" BASIC Features
With Apple Business BASIC, you can add the ELSE statement to the usual IF...THEN statement provided by BASIC. And your ELSE clauses can themselves contain other IF...THEN...ELSE constructs. Apple Business BASIC also provides a LISTing feature that automatically indents the contents of FOR...NEXT loops. These "structured" BASIC features encourage programmers to use a more logical, structured approach to developing their programs, and greatly aid development and debugging of complex programs.

Powerful Interface to Assembly Language
Because Apple Business BASIC runs in the SOS environment, you don't have to worry about memory management, buffer allocation, or file handling. This freedom will save you a significant amount of programming time.

Additionally, Apple Business BASIC relates to SOS through a powerful Invoke/Perform interface mechanism. For example, if you have created assembly language routines using the disk assembler, you can specify the assembled routine by name in an Apple Business BASIC program. Once the routines are mentioned in the "INVOKE" statement, Apple Business BASIC works with SOS to find a residence in memory for the routines, and to establish—as entry points in the resultant linked module—any function or procedure names mentioned in the routines. All you have to do is PERFORM the previously invoked routine—specifying any variables to be passed—and Apple Business BASIC and SOS automatically handle all the operational details.

Apple Business BASIC makes life a lot easier for programmers by expanding system capabilities, reducing program development time, and adding greater flexibility to formatted output and file handling facilities.

Technical Specifications

Variables
- 64 characters (max.), all significant
- Reserved variables:
  ERR, KBD, EOF, VPOS, ERRLIN, HPOS, FRE, TIME$, DATE$, PREFIX$
- Data Types
  16-bit binary integers (−32768 to +32767)
  64-bit binary integers (±9223372036854775807 or $2^{63} - 1$)
  32-bit binary floating point (±10^{38} with 6-digit precision)
  Character strings (0 to 255 characters, dynamic)
  String and numeric arrays (indexed starting with 0, no dimensional limits)

Operators
- General: +, −, *, /, , DIV, mod
  (Note: DIV and MOD are only for long integer operations)
- Binary logical operators:
  AND, OR, =, <, >, <>, ><, >=, <=, =<, =>
- Unary logical operator:
  NOT
- String operator:
  + (concatenation)

Statements
(Note: No statement or statement list may exceed 254 characters, including delimiters.)
LET (optional)
REM
GOTO
IF...GOTO
IF...THEN
IF...statementlist: ELSE statementlist
FOR ctrl variable = expression TO expression STEP expression
NEXT ctrl variable (,other ctrl variable)
GOSUB
RETURN
POP
ON expression GOTO
ON expression GOSUB
ON ERR
ON KBD
ON EOF #
OFF ERR
OFF KBD
OFF EOF #
RESUME

Utility Statements:

NEW	LOAD	STOP
CLEAR	SAVE	END
FRE	DELETE	CONT
PREFIX$	RUN	CHAIN prog name, line number

User-Defined Functions:
FN functionname (argument)
DEF FN functionname (argument) = expression

Debugging:
TRACE
NOTRACE

Cursor and Screen:

LIST	VPOS	HOME	NORMAL
DEL	HPOS	INVERSE	TEXT

String, Numeric and File Functions:

LEN	TEN	CONV	TAN	SQR
STR$	MID$	CONV%	ATN	EXP
VAL	LEFT$	CONV&	INT	LOG
CHR$	RIGHT$	CONV$	RND	TYP
ASC	SUB$	SIN	SGN	REC
HEX$	INSTR	COS	ABS	

Program resident data statements:
DATA
READ
RESTORE

Machine statements and functions:
INVOKE
PERFORM
EXFN
EXFN%

File I/O:
CATALOG
DELETE
RENAME
LOCK
UNLOCK
CREATE
OPEN # filenumber (AS INPUT, AS OUTPUT, AS EXTENSION)
CLOSE # filenumber
CLOSE
INPUT # filenumber, recordnumber
OUTPUT # filenumber
PRINT # filenumber, recordnumber
PRINT # filenumber, recordnumber USING
READ # filenumber, recordnumber
WRITE # filenumber, recordnumber

Console I/O:
INPUT
GET
TAB
SPC
SCALE
PRINT
PRINT USING
IMAGE specification(s)

String specifications:
A reserves a character position left-justified
C reserves a character position center-justified
R reserves a character position right-justified

Literal specifications:
X prints a space
/ prints a carriage return/line feed
"literal" prints whatever is in quotes

Digit specifications:
reserves one numeric digit, leading zeros suppressed
Z reserves one numeric digit, leading zeros printed
& reserves one numeric digit or comma
(comma fill every three digits)
. reserves a position for the decimal point
+ reserves a position for the sign
− reserves a position for the sign (if negative)
$ reserves a position for the dollar sign
** asterisk fill
+ + floating sign
− − floating sign (if negative)
$$ floating dollar sign

Scientific notation specification:
E reserves a position for the exponent (power of ten)

Engineering notation specification:
same as scientific notation, except the exponent is always a multiple of three

Apple *III* Pascal

The Powerful, Flexible Language

Language Library and Utilities

Available first quarter 1981

Apple III Pascal is a fully professional system development environment. It incorporates an Apple III version of the UCSD Pascal Operating System (Version 2.1) and SOS, Apple III's Sophisticated Operating System. Because it offers a compiled language, the Apple III Pascal system allows programs to execute quickly and take up minimal space. The structured programming facilities and extensive data structures in Apple III Pascal make it the language to choose for large business, scientific, and educational programs.

Benefits

Apple *III* Pascal...
- *increases programmer productivity because it provides a total software development facility...*
- *simplifies program design through Pascal's convenient structural mechanisms and rich variety of data types...*
- *lowers development costs as extended, built-in error checking catches syntax, data type, and value range errors...*
- *increases system flexibility, because it is software compatible with programs written in Apple II Pascal...*
- *lowers maintenance costs because Pascal's modular structure minimizes convoluted code which is difficult to understand and modify...*
- *optimizes your use of available memory, because its option processor allows you to use only as much graphics space as needed...*
- *expands your programming workspace, because it automatically adapts itself to available memory—which can exceed 64K bytes...*
- *allows documentation, as well as program source code, to be written and modified through the utilization of a powerful, easy-to-use text editor...*
- *provides flexible input/output (I/O) through its user-transparent use of Apple III's Sophisticated Operating System...*
- *is the most transportable of all languages: it allows access to large libraries of Pascal programs and provides the capability to run your own programs on most Pascal systems.*

Apple *III* Pascal—A Closer Look

Apple *III* Pascal has been designed for the sophisticated programmer or computer science student. Its richness of data types, control functions and powerful utility routines can dramatically improve a programmer's productivity on large projects. For this reason, Apple has selected Pascal as its standard system and applications development vehicle.

Why UCSD Pascal?
Since UCSD Pascal is recognized as the microcomputer industry standard, using it as a basis for Apple *III* Pascal gives a programmer portability. Not only can a user access large libraries of Pascal programs already in existence, but also Apple *III* Pascal programs can run with minimum conversion on most computer systems offering Pascal.

UCSD Pascal is more than a language: compiler, assembler, editor, linker, and file handler are integrated within a single, powerful system. This provides the user with a comprehensive set of software tools for optimal program development, and the ability to create and maintain program libraries. Built-in procedures and functions enhance the string, byte, and I/O capabilities.

Why Pascal For Apple *III*?
Apple has taken advantage of all of UCSD Pascal's capabilities and can offer others as well. These include:

- up to 64K bytes of memory for data;
- code space limited only by total memory size of the machine;
- easy access to Apple ///'s human interface features: color graphics, speaker, joysticks, and keyboard;
- transcendental functions;
- faster disk response and transfer rates;
- extensive documentation.

System Configuration

To use Apple /// Pascal, you will need the following system:
- an Apple /// system with 128K bytes RAM;
- a high resolution, black and white, video monitor (Apple /// Monitor recommended);
- expansion disk drive for your Apple ///.

Technical Specifications

Diskettes:
16-sector format, 140K (143,360) bytes per diskette;

Editor:
Editing functions include cursor control, text modification, formatting, searching and marking capabilities. The Editor offers:
- fast, screen-oriented editing for program development and text editing;
- 80-character lines;
- editing capabilities for Apple Business BASIC ASCII data files;
- a new EXIT option that saves to a previously specified file instead of workfile.

Editor Commands:
JUMP
PAGE
WRITE
FIND
INSERT
REPLACE
RETURN
ADJUST
MARGIN
SET MARKER
SET ENVIRONMENT
AUTO-INDENT
DELETE
XCHANGE
COPY
ZAP
VERIFY
QUIT
UPDATE
EXIT
FILLING
LEFT MARGIN
RIGHT MARGIN
PARAGRAPH MARGIN
COMMAND CHARACTER
TOKEN DEFAULT

Compiler:
- Apple /// Pascal source text is translated into P-code.
- A group of one or more source language procedures or functions can be compiled separately as a UNIT, allowing a large program to be subdivided into smaller, more manageable parts. Commonly used procedures and functions can be compiled once, stored in a library file, and accessed by other programs through the Linker.
- EXTERNAL routines can be declared and are later linked into the host program by the Linker.
- Compiler option specifications can be embedded in the source text to control listings, screen messages, range-checking, inclusion of separate source files, and other compiler parameters.

Compiler Options:

C	Following characters are placed directly into codefile.
G+	Allows GOTO statements.
G−	Forbids GOTO statements
I+	Generates I/O checking code.
I−	No I/O checking.
Ifilename	Includes named source file in compilation.
L+	Sends compiled listing to SYSTEM.LST.TEXT.
L−	Makes no compiled listing.
Lfilename	Sends compiled listing to named file.
N+	Forces all units to be normally non-resident.
P	Pages listing.
Q+	Suppress screen messages.
Q−	Sends procedure names and line numbers to CONSOLE:.
Runitname	Resident option forces named units to remain resident during execution of calling procedure.
R+	Generates range-checking code for array subscripts and variables.
R−	No range checking.
S+	Puts compiler in swapping mode.
S++	Compiler does even more swapping.
S−	Non-swapping mode: entire Compiler in memory.
U+	Compiles on user lex level.
U−	Compiles on system lex level.
Ufilename	Specifies name of library file for finding UNITs.

6502 Assembler:
- Permits relocatable assembly language routines to be generated for linking to Apple /// Pascal programs.
- Supports parameterized macros.

Assembler Directives
Delimiting Directive for Routines:
.PROC
.FUNC
.END
Label Definitions and Space Allocation Directives:
.ASCII
.BYTE
.BLOCK
.WORD
.EQU
.ORG
.ABSOLUTE
.INTERP
Macro Facility Directives:
.MACRO
.ENDM
Conditional Assembly Directives:
.IF
.ELSE
.ENDC
Apple /// Pascal Host Communication Directives:
.CONST
.PUBLIC
.PRIVATE
External Reference Directives:
.DEF
.REF
Listing Control Directives:
.LIST
.MACROLIST
.NOLIST
.NOMACROLIST
.PATCHLIST
.NOPATCHLIST
.PAGE
.TITLE

File Directive:
.INCLUDE

Linker:

- Combines compiled P-code or assembled machine code files into the system work file or another specified code file. This eliminates the need to recompile or reassemble existing code files when incorporating them into a program.
- Designates any procedure or function at the P-code level as a SEGMENT, which means that its code can be swapped in and out of memory. Handles up to 64 code segments.
- Resolves references in compiled code to UNITS or EXTERNAL routines before program execution.

Filer:

- Handles the tasks of transferring information, i.e., storing and retrieving data on disk, moving and deleting disk files, creating and modifying diskette directories.
- Provides a general utility to control SOS files.
- Provides complete control over all SOS file facilities, including directories, sub-directories, and files.
- Sets or changes prefix so that long filenames can be entered easily.

Filer Commands:

GET
SAVE
NEW
WHAT
VOLUMES
LIST DIRECTORY
EXTENDED DIRECTORY LIST
REMOVE
TRANSFER
DATE
PREFIX
BAD BLOCKS
MAKE
ZERO
QUIT
XAMINE
CHANGE
KRUNCH (applied only to Apple
// formatted diskettes)

System Utilities Include:

- System librarian—links separately compiled or assembled routines into a library file.

System Library Contains:

- The "Turtlegraphics" code unit, which provides easy access to Apple ///'s High Resolution color graphics routines. Functions and procedures permit the user to choose a color, move and turn the cursor, specify viewport boundaries, fill the viewport with color, copy an array of data to the screen from memory, write text on the graphics screen, and interrogate the system regarding the state of the cursor and screen. It adds the following procedures and functions:
INITTURTLE, TEXTMODE, GRAFMODE, VIEWPORT, PENCOLOR, PENMODE, SCREENCOLOR, FILLSCREEN, MOVETO, TURNTO, TURN, MOVE, TURTLEX, TURTLEY, TURTLEANG, SCREENBIT, DRAWBLOCK, WCHAR, WSTRING, CHARTYPE.
- The "Applestuff" code unit which contains routines to generate random numbers, interface with the joysticks, and generate sounds on the Apple ///'s speaker. It adds the following procedures and functions:
RANDOM, RANDOMIZE, JOYSTICK, DATE, TIMEOFDAY, CLOCKINFO, NOTE, KEYPRESS, SOUND.
- The "Transcend" code unit, which contains transcendental functions useful for mathematical calculations. It adds the following procedures and functions:
SIN, COS, ATAN, EXP, LN, LOG, SQRT.

Implementation Size Limits

The following is a list of maximum size limitations imposed upon the user by the current implementation of UCSD Pascal:

- Maximum number of bytes of object code in a PROCEDURE or FUNCTION is 1300. Local variables in a PROCEDURE or FUNCTION can occupy a maximum of 16383 words of memory.

The Apple /// Pascal Package
Order No. A3D0005

With your Apple /// Pascal order, you will receive:

- Four (4) Apple /// Pascal System diskettes;
- Apple /// Editing and File Facilities manual;
- Apple /// Program Preparation Tools Manual;
- Apple /// Pascal Language Reference Manual;
- Two (2) general texts on Pascal.

DOS 3.3

The Apple Disk II "Housekeeper"

DOS 3.3 is the handy housekeeper developed by Apple to help you take full advantage of your Disk II Floppy Disk Subsystem. DOS automatically keeps track of files, saves and retrieves information on a diskette, and performs a variety of other "housekeeping" chores. It dynamically allocates diskette space, maximizing diskette capacity. DOS stands for Disk Operating System; 3.3 is the version update number. When you purchase an Apple Disk II with controller, you are buying an Apple floppy disk drive and DOS 3.3.

NOTE: DOS 3.2.1 has been superceded by DOS 3.3. Programs which operate under DOS 3.2.1 cannot be read by DOS 3.3 (unless converted by "Muffin", a DOS 3.3 utility program). Conversely, DOS 3.2.1 cannot read DOS 3.3 programs.

For those Apple II/II Plus owners who wish to use, or are currently using, programs running under the previous operating system, Apple will continue to offer and support DOS 3.2.1 (Apple Product #A2D0010).

Benefits

DOS 3.3...

- *simplifies system start up by allowing for turnkey operation under Apple BASIC...*
- *increases disk capacity by more than 20% over previous versions of DOS...*
- *increases a system's capability by storing and retrieving information much more accurately, quickly, and conveniently than is possible with cassette tape...*
- *adds to system efficiency by allowing you to access data by the name under which it is filed...*
- *saves time spent searching for files because it automatically catalogs them by name and displays the complete catalog upon command...*
- *provides the capability to save, load, run, rename, delete, and verify files quickly and easily through its variety of housekeeping commands...*
- *allows rapid data retrieval through both sequential and random access to the data...*
- *allows you to make back-up copies of diskettes on a single disk drive system, rather than requiring two drives for the same purpose.*

DOS 3.3— A Closer Look

If you've purchased an Apple Disk II with DOS 3.3, only a few keystrokes are required to put the program to work for you. This process is called "booting" the disk and is explained in detail in the DOS manual.

If you are using a previous version of DOS and want to update your system to run DOS 3.3, you'll need the DOS 3.3 Kit to boost your disk capacity to accommodate the new version. The kit contains two PROMs which you will need to install. (If you are using the Apple Language System, you've already installed them.)

The System Master diskette that comes with the DOS manual is a very special one: it allows you to copy an entire diskette, convert any diskette that has an earlier version of DOS, and much more. Programs that demonstrate various capabilities of DOS are also included on the diskette and discussed in the manual.

With approximately 20% more storage capacity per diskette made available by DOS 3.3, you can store even more files on each diskette. Just type SAVE and the file name, and DOS will save it for you.

So that you'll know exactly which programs you've stored to a particular diskette, DOS provides the CATALOG command. When you

use it, a list of all the files contained on the diskette will appear on your screen. To access a particular program, simply type LOAD and its name, and within seconds, you'll be using the code you've selected.

DOS also lets you rename your files quickly and simply. To change the name of your telephone number file from *PHONE NUMBERS* to *FREQUENTLY CALLED NUMBERS,* for example, just type *RENAME PHONE NUMBERS, FREQUENTLY CALLED NUMBERS.* Presto—you've got a new file name.

It's just as easy to delete an entire file as it is to rename it. Type DELETE and the file name, and it's gone.

Some files will be more important to you than others. To ensure their safety, DOS provides the LOCK command. To prevent your file from accidental erasure, simply type LOCK and the file name. If you decide later that you want to delete the file, just type UNLOCK and the file name. You can then use the DELETE command.

The DOS 3.3 package also includes some important utility programs for file and diskette maintenance and back-up. Once you become familiar with them, you'll find that they perform many chores that save you time and make your life easier.

System Configuration

DOS 3.3 is included with all Apple II Disk Drives (with controller). To use DOS 3.3 and its utilities, you will need the following system:

- Apple II or Apple II Plus, with minimum of 32K memory.

Technical Specifications

Housekeeping Commands:

INIT	LOAD	DELETE	VERIFY
CATALOG	RUN	LOCK	MON
SAVE	RENAME	UNLOCK	NOMON
MAXFILES			

Access Commands:

FP	INT	PR#	IN#	CHAIN

Sequential Text File Commands:

OPEN	READ	APPEND	EXEC
CLOSE	WRITE	POSITION	

Random-Access Text File Commands:

OPEN	CLOSE	READ	WRITE
BYTE			

Machine-Language File Commands:

BLOAD	BRUN	BSAVE

DOS Messages:

DISK FULL	NO BUFFERS AVAILABLE
END OF DATA	NOT DIRECT COMMAND
FILE LOCKED	PROGRAM TOO LARGE
FILE NOT FOUND	RANGE ERROR
FILE TYPE MISMATCH	SYNTAX ERROR
I/O ERROR	VOLUME MISMATCH
LANGUAGE NOT AVAILABLE	WRITE PROTECTED

The DOS 3.3 Package Order No. A2M0044 (Disk II with controller)

With your order for an Apple Disk II with controller, you will receive:

- Apple Disk II with controller;
- DOS 3.3 System Master diskette, including utility programs;
- DOS Version 3.3 Instructional and Reference Manual;
- BASICS diskette (for diskettes written under earlier versions of DOS);
- Blank diskette.

The DOS 3.3 Kit Package Order No. A2D0023

With your order for the DOS 3.3 Kit, you will receive:

- Two (2) 16 sector PROMs* (P5A and P6A)
- IC puller;
- DOS 3.3 System Master diskette, including utility programs;
- DOS Version 3.3 Instructional and Reference Manual;
- BASICS diskette (for diskettes written under earlier versions of DOS);

*If you are using the Apple Language System (which already contains these PROMs), the PROMs supplied with the DOS 3.3 Kit will be spares.

Apple *III* Sophisticated Operating System(SOS)

Simplicity in System Control

The Apple III Sophisticated Operating System (SOS) is a powerful software interface that helps you exploit Apple III's advanced system capabilities. With SOS, you don't need to worry about most internal system functions, such as which disk drive contains a file, which bank of memory is being used, or which slot a peripheral interface card occupies. These and other functions are all controlled automatically.

Designed for easy expandability as well as operational convenience, SOS enhances and ensures Apple III system flexibility. A simple-to-use System Configuration Program (supplied on diskette) allows even inexperienced users to custom configure SOS to meet their specific needs.

SOS provides a solid foundation for writing advanced applications on the Apple III. It features a hierarchical file system, device level interrupt capabilities, user level interrupt capability (events), a device-independent file system, and memory management capabilities. And, since all languages on the Apple III use SOS, they all share a common disk format. For instance, a Pascal application program can access a BASIC text file just as easily as it can access a Pascal text file.

Apple's Sophisticated Operating System for the Apple III gives you the efficiency, comprehensiveness, and expandability you've always wanted in an operating system, with a degree of convenience you may never have thought possible. SOS is supplied with all Apple III systems and software.

Benefits

The Apple *III* Sophisticated Operating System...

- *improves personal productivity, because it frees you from most system control responsibilities...*
- *simplifies programming, because it provides powerful, standard device and file interfaces for all languages and applications...*
- *maximizes system efficiency, by automatically controlling the use and allocation of system resources...*
- *speeds up software development, by reducing program size and complexity...*
- *ensures system adaptability, because it's designed for easy expansion and custom configuration.*

The Apple *III* Sophisticated Operating System— A Closer Look

SOS, which consists of five basic components, acts as a buffer between user programs and the Apple *III* hardware. Using these components, SOS controls Apple *III* system operation and resource allocation with a minimum of user involvement. As far as the user is concerned, handling the system's input/output (I/O) devices is as easy as handling its data files, once SOS has been configured with the proper drivers.

Configuring SOS is a quick and easy process, even for the most inexperienced user. Simply follow the directions in the "System Configuration Program," one of the programs contained on the System Master diskette supplied with your Apple *III* system.

Suppose, for example, that you've added an Apple Silentype Printer to your Apple *III* system. To configure SOS so it will automatically control the printer, execute the System Configuration Program and select the first option on the menu, ADD A DRIVER. Then simply follow the directions displayed on the screen.

Once you've configured SOS to control your Silentype, you need never concern yourself again with its system operational requirements. SOS handles them for you—automatically—whenever you use the printer. Configuring SOS for other printers and peripherals is just as easy.

You don't have to be a system architect to get complete access to the Apple ///'s advanced capabilities. Apple's Sophisticated Operating System helps you control and configure your Apple ///, maximizing its benefits and power in every configuration and application.

Technical Specifications

The Structure Of SOS

At the core of SOS is the "Kernel," a set of programs and subroutines that control the flow of information around and through SOS. The Kernel is divided into five main areas: the File Manager, the Device Manager, the Memory Manager, the Interrupt Manager, and the Utility Manager.

The File Manager controls the logical storage, transfer and routing of information within the Apple. All information is stored in units called files. The File Manager can create and destroy files, read their contents, write new information into them, change their names, or move them from place to place.

The Device Manager controls the physical storage and flow of information, into and out of the Apple ///. Together with its associated device drivers, it controls the operation of the console (the screen and keyboard), the serial port, the printer port, the disk drives, and all other peripheral devices connected to the Apple.

The Memory Manager in SOS allows programs and languages to use all the memory you have in your Apple quickly and efficiently. It keeps track of "banks" and "pages" of memory, and allocates their use to different programs and languages.

The Interrupt Manager works with the Device Manager to allow devices such as the keyboard or the serial port to interrupt the Apple in the middle of an operation. The Apple can then attend to the interrupting device, and resume its previous operation as if nothing had happened. The operation of the Interrupt Manager, like that of the Memory Manager, is normally invisible to you.

The Utility Manager lets programs access two built-in devices, the joystick interfaces and the clock/calendar. Most languages and applications that use the clock and joysticks will have more convenient, higher-level commands to read the status of those devices. These high-level commands simply request the information from the Utility Manager through SOS.

Besides those components of SOS making up the Kernel, there are two other components. One is ***System Utilities,*** which provides high level routines for performing more complicated system tasks with a minimum of user interaction. Another is the ***System Configuration Program,*** which allows custom configuration of SOS and the I/O device drivers, in order to match the user's specific needs.

File Management System Calls

CREATE (pathname,create list,length)
DESTROY (pathname)
RENAME (pathname,new pathname)
SET FILE INFO (pathname,file list,length)
GET FILE INFO (pathname,file list,length)
VOLUME (dev name,vol name,free blocks)
SET PREFIX (prefix path)
GET PREFIX (prefix path,length)
OPEN (pathname, ref num,open list,length)
NEW LINE (ref num,is newline,newline char)
READ (ref num,buf,bytes,bytes read)
WRITE (ref num,buf,bytes)
CLOSE (ref num)
FLUSH (ref num)
SET MARK (ref num,base,displacement)
GET MARK (ref num,mark)
SET EOF (ref num,base,displacement)
GET EOF (ref num, eof)

Device Management System Calls

D READ (dev num,buf,bytes,block num,bytes read)
D WRITE (dev num,buf,bytes,block num)
D CONTROL (dev num,control code,control list)
D STATUS (dev num,status code,status list)
GET DEV NUM (dev name,dev num)
D INFO (dev num,dev name,dev list,length)

Utility Management System Calls

SET FENCE (priority)
GET FENCE (priority)
SET TIME (time)
GET TIME (time)
JOYSTICK (j mode,j value)

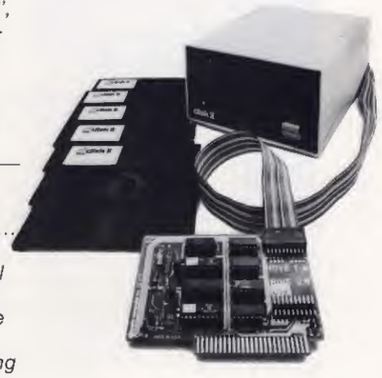
Memory Management System Calls

REQUEST SEG (base,limit,seg id,seg num)
FIND SEG (srch mode,seg id,pages,base,limit,seg num)
CHANGE SEG (seg num,chg mode,pages)
GET SEG INFO (seg num,base,limit,pages,seg id)
GET SEG NUM (bankpage,seg num)
RELEASE SEG (seg num)

Apple Disk II Floppy Disk Subsystem

Dynamic and Versatile Data Storage

The Apple Disk II Floppy Disk Subsystem increases the capability of your Apple Computer System through the use of flexible, or "floppy", disks for data storage. Expanded memory capacity, greater data retrieval speed, and random access to your stored data—all of these, and more, are made available through the Disk II Subsystem. Whether you use your Apple with a Disk II in business to control inventory, or at home for household management, you'll find that it's the superior answer to your data storage needs.



Benefits

The Apple Disk II Floppy Disk Subsystem...

- *optimizes efficiency by offering one of the highest storage capacities available with any personal computer on today's market...*
- *offers an economical advantage over other disk drives, by providing one of the lowest storage costs per character of any personal computer disk drive...*
- *increases productivity by allowing you to access data much more quickly than is possible with cassette tape...*
- *makes possible a wide range of computer applications by allowing software to access data...*
- *provides for greater system expansion than is possible with any other personal computer system, because it supports up to three interface cards and six disk drives.*

Disk II—A Closer Look

The Disk II drive, unlike the Apple II, is a mechanical device with motors and moving parts. Understanding the principle behind the Apple Disk II drive is as simple as understanding the way a phonograph turntable works. Disk II has been designed in the same manner, although it is enclosed in a special cabinet. The record, or "diskette", is flexible ("floppy") and fits on a spindle inside the drive. The drive turns the diskette at much faster speeds than a phonograph turns a record.

Within the drive, a special record/playback head replaces the phonograph needle, and it reads the diskette the way a tape head reads an audio cassette. The head is mounted on a positioner, the counterpart of the phonograph arm, and it moves the head laterally across the floppy diskette to any area requested by the computer program. This capability is called "random access". It allows you to retrieve information from the diskette much more quickly than is possible with cassette tape.

Apple's Disk II may be purchased with or without a controller; however, the first one you buy must have the controller in order to interface the Disk II system to your Apple. Because each controller supports two disk drives, you'll be able to attach a second drive to it when you wish to expand your system. Your Apple will support a recommended maximum of three interface cards and six drives.

In addition to the advantages offered by a disk storage system, you'll also receive a special disk operating system program (DOS)* when you purchase a Disk II with controller. It automatically keeps track of your files, saves and retrieves information on a diskette, and performs a variety of other functions.

**NOTE; DOS 3.2.1 has been superceded by DOS 3.3. Programs which operate under DOS 3.2.1 cannot be read by DOS 3.3 (unless converted by "Muffin", a DOS 3.3 utility program). Conversely, DOS 3.2.1 cannot read DOS 3.3 programs.*

For those Apple II/II Plus owners who wish to use, or are currently using, programs running under the previous operating system, Apple will continue to offer and support DOS 3.2.1 (Apple Product # A2D0010).

System Configuration

To use the Apple Disk II Floppy Disk Subsystem, you will need:
- Apple II or Apple II Plus, with a recommended minimum of 32K memory.

Technical Specifications

Format:
Sectoring: soft (hard-sectored diskettes may be used)
Recording Surfaces: one
Tracks per Surface: 35

Capacity:
Formatted data capacity
per surface, bytes: 140K, 16 sector (with Pascal and DOS 3.3)
Available data capacity
per surface, bytes: 137K with Pascal, and
124K under DOS (both 16-sector)

Characteristics:
Head movement time—Track to track, msec: 25
Across all tracks, msec: 600
Head load time, msec: 50
Average rotational delay, msec: 100

Packaging:
Controller: PC board that plugs into one of the Apple's eight expansion slots
Drives per controller: 2
Drive dimensions (h x w x d), inches: 3.25 x 5.75 x 8.0
Weight (pounds): 3
Power source for drives: Apple system power supply

The Apple Disk II Package
Order No. A2M0044 (with controller)
Order No. A2M0003 (without controller)

With your order for a Disk II drive with controller, you will receive:
- Apple Disk II drive (the main box);
- a printed circuit card (the controller) that plugs into the Apple;
- a flat ribbon cable already fastened to the disk drive, for connecting the disk drive to the controller card;
- System Master diskette (DOS);
- blank diskette;
- warranty card;
- adhesive labels;
- DOS Instructional and Reference Manual.

With your order for a Disk II without controller, you will receive:
- Apple Disk II drive (the main box);
- a flat ribbon cable already fastened to the disk drive, for connecting the disk drive to a controller card;
- warranty card;
- adhesive labels.

The Apple Graphics Tablet

Creative Electronics for the '80s

The Apple Graphics Tablet turns your Apple II Personal Computer System into an artist's canvas or illustrator's drawing board by offering a medium for creating and displaying pictorial information electronically. Block diagrams, architectural renderings, logic diagrams, schematics, mechanical shapes and fine art are just a few of the applications of the Graphics Tablet. Its advanced features, combined with surprising simplicity of operation, make it an ideal tool for transforming the creative idea into visual reality.

Benefits

The Apple Graphics Tablet...
- *lets you free your imagination to create detailed illustrations and other artwork, because results are displayed in Apple's high resolution graphics mode...*
- *can be quickly understood and operated by anyone, from a small child to a professional artist, because the easy-to-use command menu eliminates the need for any prior knowledge of computer operations...*
- *allows you to modify the system to fit your particular graphics needs, because you can change, delete, or add to existing software...*
- *permits you to save your creations on a diskette and later recall them for review or change, through its convenient image storage and editing features...*
- *protects your initial investment by providing for the expansion and future growth of your present software...*
- *offers a low-profile desktop package that fits easily into even the smallest workspace, because the power supply and control electronics reside within your Apple.*

The Graphics Tablet—A Closer Look

The Graphics Tablet and its pen connect to the Tablet Interface Card, which plugs into one of the peripheral connector slots in your Apple computer. After installation, insert the Apple Graphics Tablet Software diskette into your Apple disk drive, turn on the power and, within seconds, you're ready to start creating.

The command boxes across the top front of the Tablet offer the 22 separate functions available, and make it possible for you to switch modes simply by pressing the Tablet's pen to the desired command box.

Suppose you want to attempt a landscape layout. Begin by pressing the DRAW command box and then the PEN COLOR command box. The color options menu will appear on your screen.

Move the pen lightly across the Tablet; an indicator will drift across your screen, signaling that the pen is in contact with the Tablet. Move the pen until the indicator rests on the color block you want; then press down on the Tablet's surface. The color menu will disappear; the blank screen is ready for your first stroke in the chosen color. Changing colors simply requires pressing the PEN COLOR command box and repeating the selection process.

As you progress with your landscape layout, you might make an error here and there. No problem. To erase, simply select the background color and draw over the mistake; then choose the appropriate color and redraw.

Maximum drawing space on the Tablet is 11 by 10 inches. If you wish to draw in a smaller area, press the VIEWPORT command box with your pen. Place dots in the diagonal corners of the desired drawing area; the Tablet will automatically draw the borders. You will then be able to draw only in the specified area.

Suppose you want to include an intricate flower in your landscape layout, but feel uncertain about using the tiny drawing strokes it will require. The Tablet software was designed with that problem in mind. Set a VIEWPORT surrounding the area in which the flower will be drawn; then simply press the REDUCER command to shrink the entire Tablet working area into the VIEWPORT on the screen. This converts large pen motions on the Tablet into small motions on the screen, thus allowing you to draw intricate, detailed designs.

To achieve the opposite result—a large pen motion on the screen from a small motion on the Tablet—press the WINDOW command box. Select the portion of the Tablet to be enlarged, and that surface will be expanded to fill the screen.

When you have completed your landscape layout, or if you want to stop drawing for awhile, save your creation for future review or revision by pressing the SAVE command box. The picture will disappear from the screen and your Apple will ask you for the name of the drawing. Type in the name you choose, press the "return" key, and your drawing will be safely stored on a diskette.

Because the Graphics Tablet employs your Apple's problem solving capability, it does more than allow you to create drawings. Suppose you want to include a swimming pool in your landscape layout. First, draw the pool into your landscape. Then, to determine how many square feet of land you've used, convert the screen units into feet. To do this, simply press the CALIBRATE command box and wait for BEGINNING POINT? to appear. Select any point on the screen and press down on the Tablet with your pen. ENDING POINT? will then be displayed. Choose a destination point and again press down with your pen. Your Apple will automatically convert the distance between those two points into screen units and ask you to assign your value—for example, 10 screen units equals two feet. Then, using the AREA command, move the pen over the perimeter of the pool. Your Apple will convert the units into square feet automatically.

The Graphics Tablet can also be programmed to be a powerful tool for special applications. Suppose, for example, that you're conducting a telephone survey on laundry detergent. Instead of marking the responses on separate sheets and totaling them when the survey is complete, you can draw the form on your Tablet and write a program which will total the responses as you enter them with the pen. Your program could even request that the Apple break down the responses into different categories.

So, whether you're an engineer, a professional artist, an architect, illustrator, novice or programmer, the Apple Graphics Tablet offers you the opportunity to free both your imagination and your creative spirit.

System Configuration

To use the Apple Graphics Tablet, you will need the following system:

- Apple II with Applesoft Firmware Card, or Apple II Plus, with 48K of memory; or
- Apple II or Apple II Plus, with the Apple Language System;
- a composite video color monitor or television*;
- an Apple Disk II disk drive with controller.

*A black and white monitor or television may also be used if you do not require color.

Technical Specifications

Power Requirements (supplied from Apple power supply):
230mA + 5 VDC
40mA + 12 VDC
20mA − 5 VDC
40mA − 12 VDC

Software/Firmware:
Control program in Applesoft BASIC.
Quick-draw routine in Assembly Language.
Interface Firmware in ROM.

Digitizing Area:
28 cm x 28 cm (11 in x 11 in)

Overall Size:
39.5 cm x 39.5 cm x 2.5 cm (15.5 in x 15.5 in x 1 in)

Controller Card Size:
17.8 cm x 7.0 cm x 1.3 cm (7 in x 2.75 in x .5 in)

Pen Size:
15.2 cm (6 in) with 1.8m (6 ft) cable

Data Rate:
Up to 120 coordinate pairs per second

Coordinate System:
Absolute cartesian with selectable origin and scale

Output Forms:
Eight-bit binary coordinate pairs

Interface Levels:
TTL—provided by Apple interface

Operating Modes (Selectable from Tablet Menu)

Tablet Modes:

RESET
Sets Tablet to default modes.

CLEAR
Clears Apple screen or VIEWPORT, whichever is smaller.

WINDOW
Selects active portion of Tablet surface.

BKGND COLOR
Sets entire screen to chosen color.

DELTA
Sets the number of dots to move before drawing a line. Also turns audio feedback ON/OFF.

SOFT RESET
Clears the viewport.

VIEWPORT
Sets a sub-area of the screen as the active area.

CALIBRATE
Sets screen scale.

REDUCER
Maps the entire tablet surface into the current viewport.

Pen Modes:

PEN COLOR
Sets drawing color to one of the six Hires colors.

DRAW
Draws lines.

LINES
Draws a line between two specified points.

DOTS
Draws a single dot each time the pen is placed on the active tablet area.

FRAME
Draws an open rectangle given diagonal corners.

BOX
Draws a solid rectangle using the current pencolor, given diagonal corners.

Command Functions:

CATALOG
Displays names of files currently stored on a diskette.

SAVE
Saves the current picture to diskette.

LOAD
Loads a previously generated picture file.

SEPARATE
Removes all colors from the screen except the selected color.

SLIDE
Repositions the image on the screen using both horizontal and vertical wraparound.

DISTANCE
Calculates the scale value of the length of a drawn line.
AREA
Calculates the scaled area of a drawn enclosed figure.

The Graphics Tablet Package Order No. A2M0029

With your Graphics Tablet order, you will receive:
- Apple Graphics Tablet with cable;
- Pen with 6-ft. connector cable;
- Two (2) "Graphics Tablet Software" Diskware diskettes;
- Graphics Tablet Instruction Manual;
- Interface;
- Mylar overlay;
- Warranty card.

The Apple Silentype Thermal Printer

Eliminating the High Cost of Hardcopy

The Apple Silentype is a quiet, versatile, and compact thermal graphics printer. It offers increased flexibility over other printers—at a fraction of the cost—because the Silentype receives both its power and intelligence from your Apple computer. To the extent you can program your Apple, you can program the Silentype—whether you're using machine language, BASIC, or Apple Pascal. Or you can use the Silentype effectively without doing any programming at all. With a few simple keystrokes, you can change margins and line spacing, specify printing intensity, and print finely detailed charts and graphs.

The Apple Silentype, offering you programmable printing—and much more—at an affordable price.

Benefits

The Apple Silentype...
- *offers you higher reliability than other microprocessor-based printers, since it contains fewer components...*
- *offers you more printing flexibility, because it has the capability of printing high resolution graphics...*
- *may be used in any office or home environment without a muffler, because it's quiet...*
- *can be transported easily along with your Apple, because it takes up little space and weighs just six pounds...*
- *saves you time and money, because it requires no preventive maintenance, adjustments, or lubrication.*

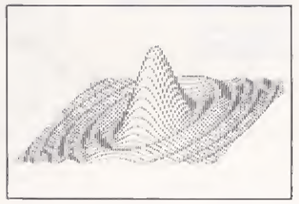
The Silentype—A Closer Look

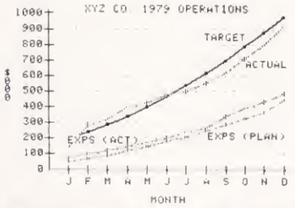
Connecting the Apple Silentype to your Apple Computer System takes just minutes. With the Apple *III*, turn off the system and plug the printer cable into the Silentype interface jack, on the rear connector panel. Next, program the printer for the type style you want by inserting the supplied diskette into the Apple *III*'s disk drive, and following the instructions. (Only Apple *III* Silentype systems can print in various type styles.) Once the type style has been programmed, you're ready to print.

If you're connecting the Silentype to an Apple II or Apple II Plus, begin by making sure your system is off. Plug the printer cable into the Silentype interface card (supplied with the Silentype package) and remove the Apple's cover. Then plug the interface card into one of its expansion slots (usually slot #1), and replace the cover. That's all there is to it.

The Silentype prints upper and lower case text at up to 40 characters per second, 80 characters per line; high resolution graphics are printed at 60 dots per inch. The Silentype prints clear, readable copy on white paper—there's no hard-to-read, scratch-susceptible, aluminized paper required.

The Silentype paper path is short and straight, so you don't need to worry about paper jams. Paper is available in 80 ft. rolls, and—because the Silentype has no tractors—loading it into the printer takes just a minute. To alert you that reloading is necessary, a colored stripe along one edge signals the last few feet of the roll. While the printer cannot be damaged by running without paper, changing the roll when the stripe appears will ensure that you don't run out of paper in the middle of printing a file. Because the Silentype is a thermal printer, no ribbons—or messy ribbon changes—are required.





System Configuration

To use the Apple Silentype Printer, you will need:
- any Apple *III*; or
- any Apple II or Apple II Plus.

Technical Specifications

Text Mode:
Print Rate—Up to 40 characters/second, bidirectional
Line Length—80 characters
Horizontal Spacing—10 characters/inch, nominal
Vertical Spacing—6 lines/inch, nominal
Line Feed Time—65 milliseconds, nominal
Character Format—upper and lower case, 5x7

Graphics Mode:
Print Rate—240 columns of 7 dots each per second
Line Length—480 dots
Horizontal Resolution—60 dots/inch, nominal
Vertical Resolution—60 dots/inch, nominal
Line Feed Time—55 milliseconds, nominal

Interface:
Power Supply—From Apple computer via 9-conductor data/power interface cable (supplied)
Interface—Custom synchronous serial
Interface Cable—9-conductor, 1.2 meters (3½ feet) nominal length

Paper:
Width—21.6 cm (8½ in) nominal
Length—24.4 m (80 ft) nominal
Technology—Thermal, low temperature; black image

Mechanical:
Dimensions—19.7 cm (7¾ in) x 31.1 cm (12¼ in) x 7.0 cm (2¾ in) nominal
Weight—2.7 kg (6 pounds), excluding paper

The Apple *III* Silentype Package
Order No. A3M0001

With your Apple *III* Silentype Package, you will receive:
- Silentype printer;
- Apple *III* Silentype Driver Diskette;
- One roll of heat-sensitive paper (already installed in the Silentype printer);
- Silentype Operation and Reference Manual;
- Warranty card.

The Apple II/II Plus Silentype Package
Order No. A2M0036

With your Apple II/II Plus Silentype Package, you will receive:
- Silentype printer;
- Silentype Interface Card with cable;
- One roll of heat-sensitive paper (already installed in the Silentype printer);
- Silentype Operation and Reference Manual;
- Warranty card.

Note: Replacement rolls of heat-sensitive paper (Apple order number A2C0001) may be ordered through your Apple dealer.

Daisy Wheel Printer

(Qume Sprint 5™)

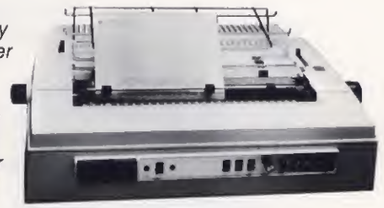
Letter-Quality Hardcopy For Business Communications

Accessories

The Qume Sprint 5 is a popular, fully-formed character, impact printer that produces documents of better than typewriter quality, at an average speed of 45 characters per second. Field-proven and highly reliable, it works with any Apple II, Apple II Plus, or Apple III computer system, in applications ranging from word processing to business forecasting.

When used with the Apple III, the Qume Sprint 5 connects directly to the serial (RS-232) interface port on the system's rear panel. With an Apple II or Apple II Plus system, the printer plugs into a connector on the High-Speed Serial Interface Card (A2B0005), which is then installed in any unused expansion slot in the Apple.

The Qume Sprint 5 handles all kinds of documents, from form letters printed on letterhead, to financial statements up to 198 characters per line in length. The Qume Sprint 5 is the professional printer for professional-looking documents.



Benefits

The Qume Sprint 5...
- *improves the quality and impact of your letters and documents, because its fully-formed, highly readable characters give all your printed communications a thoroughly professional look...*
- *increases office productivity, through letter-perfect, 45 character per second printing...*
- *allows you to match type styles with your needs, because it provides a variety of available type fonts on easily interchanged printwheels...*
- *increases printing reliability, thanks to its field-proven, highly dependable design and components...*
- *interfaces quickly with your system, by plugging directly into the Apple III's back panel, or into a connector on the High-Speed Serial Interface Card for the Apple II or Apple II Plus.*

System Configuration

To use the Qume Sprint 5, you will need:
- any Apple *III* system; or
- any Apple II or Apple II Plus system, with a High Speed Serial Interface Card installed.

Technical Specifications

Parameter	Description
Print Speed:	45 characters/second (average)
Interface:	Asynchronous Serial (RS-232C or 20 milliamp DC current loop)
Forms:	15" max. width, single sheet or continuous forms
Fonts:	96-character "daisy" printwheels in various styles/alphabets
Character Spacing:	10, 12, and 15 characters/inch, plus proportional spacing
Horizontal Format:	
—10 pitch	132 columns
—12 pitch	158 columns
—15 pitch	198 columns
Vertical Format:	6 lines/inch (normal)
Vertical Slew Rate:	5 inches/second
Plotting Resolution:	Two modes—5760 or 2880 points/inch^2
Paper Feed:	Pressure platen (standard); forms tractor (optional)
Ribbon:	Cartridge type; carbon or fabric ribbon
Printwheel:	Easily changeable; large variety of typestyles

™Sprint 5 is a trademark of Qume Corp.

Operator Controls:	Horizontal/Vertical Forms Positioning Forms Thickness Manual Ribbon Advance Communications Form Feed Printer Control Functions
Temperature:	
—Operating	10 to 40 degrees C. (50 to 105 degrees F.)
—Storage	−40 to +76 degrees C. (−40 to +170 degrees F.)
Relative Humidity:	
—Operating	10% to 90% RH (no condensation)
—Storage	2% to 98% RH (no condensation)
Size:	
—Width	59.7 cm (23.5 in)
—Height	19.4 cm (7.6 in)
—Depth	47.8 cm (18.8 in)
Weight:	20.0 kg (44 lbs)
Power Requirements:	115 volts @ 3.0 amps (Model A2M0045); 230 volts @ 1.5 amps (Model A2M0046)

The Qume Sprint 5 Package

Apple Order No. A2M0045 (115 Volt)

Apple Order No. A2M0046 (230 Volt)

With your Qume Sprint 5 order, you will receive:

- Qume Sprint 5;
- Pressure feed platen;
- Paper guide;
- Cover for power supply;
- Interface cable and connector;
- "Prestige Elite" printwheel;
- Fabric ribbon cartridge;
- Operating documentation;
- Warranty.

Note: To use the Qume Sprint 5 with the Apple II or Apple II Plus computers, an Apple High-Speed Serial Interface Card (Order No. A2B0005) is also required.

Disk II For Apple *III*

Accessories

All the Advantages of the Floppy Disk, And More

Disk II for the Apple III Professional Computer System is a floppy disk drive subsystem that allows you to increase the data storage capacity of your Apple III as your needs expand.

The Apple III Computer System accepts up to three external disk drives, in addition to its one built-in drive, for a total on-line storage capacity of 560K bytes. And because the Apple III was designed for easy, inexpensive system expansion, no extra control hardware or software are required as you add second, third, and fourth drives.

As your storage requirements increase, expand your system's capacity with Disk II for the Apple III—Apple's professional, reliable disk storage subsystem.

Benefits

Disk II for Apple *III*...

- *increases your system's capabilities, by offering you up to 560K bytes of on-line storage capacity...*
- *maximizes your system's flexibility, because it allows you to expand disk storage in step with your needs, in convienient, 140K-byte increments...*
- *simplifies interfacing, because it quickly plugs in, and doesn't require any additional control hardware or software.*

Disk II For Apple *III*— A Closer Look

Installation of the disk subsystem couldn't be easier. The first external drive that you add to your system just plugs into the back of your Apple *III*. Then up to two more drives can be added in "daisy-chain" fashion, simply by plugging the second drive into the first, and the third into the second. There are no separate power cords to tangle up, because the Apple *III* supplies power directly to the disks.

Whether you add expansion drives to the Apple *III* Information Analyst, the Apple *III* Word Processor, or any other system configuration, Apple *III*'s Sophisticated Operating System (SOS) automatically takes care of all interface software requirements for up to three external disk drives. Once your expansion drives are installed, SOS automatically identifies the number and the name of each whenever you start up your system. SOS also automatically maintains and updates content directories of each diskette in a system drive. This allows you to access data—directly by file name—from any diskette in any of the drives.

The additional storage capacity provided by the Apple *III* Disk II expansion drives can speed up many of the common operations you perform with your Apple *III*. For example, adding just one expansion drive to your system cuts the time required to make a back-up copy of a diskette from minutes to seconds.

In addition, some Apple *III* programs require more than one disk drive to perform certain functions. For instance, some programs—such as Apple's Mail List Manager—need two drives to merge data files from two different diskettes into a separate, single file. Similarly, program development in Apple Pascal requires two or more disk drives.

Whether you want to increase your storage capacity or extend your system capabilities, Disk II for Apple *III* lets you quickly and easily expand your Apple *III* Professional Computer System.

System Configuration

To use the Disk II for Apple *III*, you will need:

- any Apple *III*.

Technical Specifications

Format:
Sectoring: soft (hard-sectored diskettes may be used)
Recording Surfaces: one
Tracks per Surface: 35

Capacity:
Formatted Data Capacity: 140K bytes

Characteristics:
Head movement time (track to track): 25 msec.
Head load time: 50 msec.
Average rotational delay: 100 msec.
Data transfer rate: 125K bits per second

Packaging:
Drive dimensions (HxWxD): 8.3 cm (3.25") x 14.6 cm (5.75") x 20.3 cm (8.0")
Drive weight: 1.36 kg (3.0 lbs)
Power source for drives: Apple *III* system power supply

The Disk II For Apple *III* Package
Order No. A3M0003

With your Disk II for Apple *III* order, you will receive:
- Disk II for Apple *III*;
- Drive identification labels for numbering your expansion drive(s) either 2, 3, or 4.

NOTE: All instructions and documentation for installation of expansion drives are contained in the Apple *III* Owner's Guide.

Apple *III* Monitor

Accessories

Up to 80 Sharp Characters Per Line

Apple's portable, 12-inch (diagonal), black & white monitor displays 80-character by 24-line text and high resolution graphics with precision and high readability. Designed for use with Apple III computer systems, it will also display 40 characters per line when used with Apple II or Apple II Plus computers, or when the Apple III is operating in Apple II emulation mode.

The Apple III Monitor connects easily to your Apple computer via a standard cable, supplied with every Apple III system. Up-front controls are concealed behind a flip-down panel below the display, and include power on/off, contrast, and brightness, as well as vertical and horizontal hold. Vertical linearity and height controls are located on the rear panel.

The monitor's case colors match the colors of the Apple III computer, giving the whole system an appearance as professional as its performance. Whether you're performing word processing or preparing sales forecasts, this dependable, 12-inch black & white monitor gives you the "big picture" you need to produce effective communications.

Benefits

The Apple *III* Monitor...
- *displays highly readable characters and graphics, because its sharp resolution extends over the entire screen, even in the corners...*
- *allows quick adjustment of its display, through a bank of convenient front-panel controls...*
- *easily positions to your most comfortable viewing angle, fitting either on top or to the side of your Apple III computer...*
- *provides years of trouble-free service, with its heavy-duty case and quality construction throughout.*

System Configuration

To use the Apple *III* Monitor, you will need:
- any Apple *III*, Apple II, or Apple II Plus system;
- RCA phono-type connector cable with toroids (supplied with the Apple *III*).

Technical Specifications

Electrical	
CRT Type:	12" (30.5 cm) diag., 90° deflection; anti-reflective faceplate
Phosphor:	P4 (white)
Scanning:	EIA Standard; 525 lines; 30 frames, 60 fields/sec.; overscan
Data Input Signal:	1.0 volt p-p ± 0.2 volt composite, sync neg. into 75 ohms
Drive Rates:	
—Horizontal	15.78 kHz
—Vertical	60 Hz
Video Bandwidth:	18 MHz
Horizontal Resolution:	800 lines, center
Geometric Distortion:	Less than 1%
Nonlinearity:	Horizontal: less than 7%
Operating Temperature Range:	0 to 50 degrees C. (32 to 122 degrees F.)
Power Requirements:	117 VAC, 60 Hz, 27 Watts, w/power cord
Mechanical	
Cabinet:	Vinyl clad sheet steel, plastic front
Dimensions:	
—Width	31.0 cm (12 7/32")

	—Height	31.5 cm (12 13/32")
		31.7 cm (12 15/32")
	Weight:	9 kg (19.8 lbs)
	Controls/Connector	
	Front Controls:	Power on/off; contrast; bright; vert. hold; horiz. hold
	Rear Controls:	Vertical linearity; height
	Internal Controls:	Focus; sub-bright; B+ adjust
	Signal Connector:	RCA-type; 75 ohms
The Apple *III* Monitor Package **Order No. A3M0006**	With your Apple *III* Monitor order, you will receive: ■ Apple *III* Monitor; ■ Documentation.	

Apple Joystick

The Ultimate in Handheld Paddle Control

Available first quarter 1981

The Apple Joystick is a true X-Y paddle control interface that's fun to use and simple to integrate into all kinds of programs. Easy to hold, it features a control shaft that moves a full 360 degrees, a push-button "fire" switch, and a three-position, mode selecting, toggle switch.

The Joystick was designed for use with Apple II, Apple II Plus, and Apple III systems. With the Apple III, up to two Joysticks can be used, both of which plug into existing sockets in the back of the system. The Apple II and Apple II Plus each accept a single Joystick, which simply plugs into the game I/O socket in either machine.

A uniquely-designed mechanical interface converts the Joystick's shaft motion to two analog signals (one for the X axis, the other for the Y axis). The result is a superbly professional "feel" and sensitivity that makes other paddles seem cumbersome.

Whether you employ it in applications requiring advanced hand input capabilities, or just use it to play a more stimulating game of Apple Trek, the Apple Joystick gives you an unbeatable degree of responsive, reliable control for your Apple computer system.

Benefits

The Apple Joystick...

- *increases your handheld input capabilities, with its sensitive, 360-degree X-Y movement and positioning control...*
- *adds design and control flexibility, with its supplemental button and toggle switches...*
- *simplifies program development, especially with the Apple III, because of its simple software interface...*
- *improves the "feel" of manual control, because of its smooth action, spring-loaded control shaft, and easy to hold and operate design...*
- *increases the accuracy and reliability of handheld control, because of its true analog-to-digital conversion...*
- *easily interfaces with Apple systems, via built-in ports.*

System Configuration

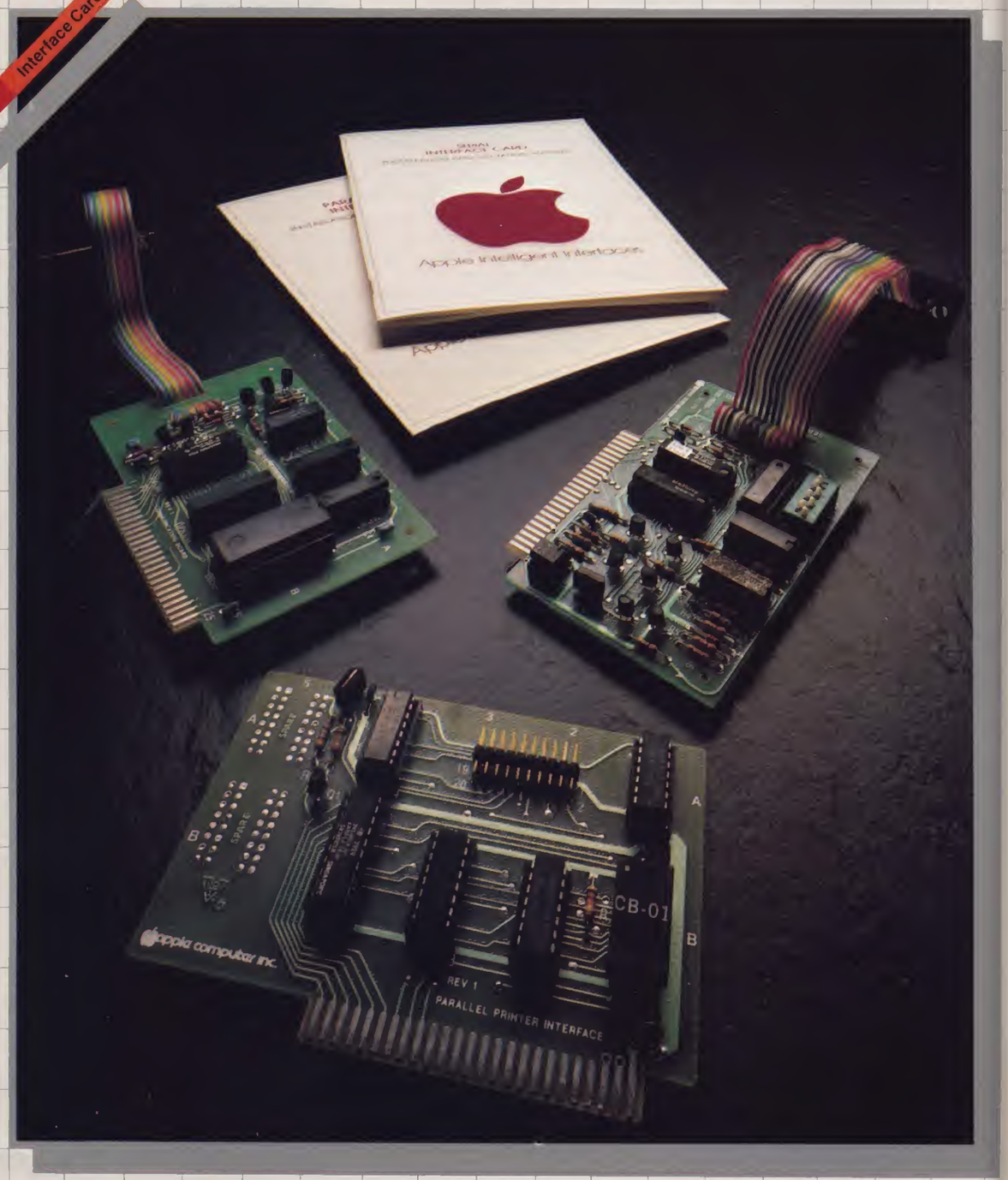
To use the Apple Joystick, you will need:
- any Apple *III* system; or
- any Apple II or Apple II Plus system.

Technical Specifications

Parameter	**Description**
(Apple III, II, II Plus systems):	
Joystick Control:	resistive-type contacts
Switches:	(1) single pole, momentary pushbutton (1) single pole, three position (1 momentary) toggle switch
Axis position accuracy:	8 bits (1 part in 256)
Cable type:	6-wire
Cable length:	5 ft.
(Apple III only):	
Connector type:	DB-9
Apple II, II Plus only):	
Connector type:	16-pin DIP socket

The Apple Joystick Package
Order No. A3M0007

With your Apple Joystick order, you will receive:
- Apple Joystick;
- Joystick Owner's Guide.



Apple II/II Plus Interface Cards

Intelligent Interfaces to Expand Your Apple System

Serial Interface Card

The Serial Interface Card allows an Apple computer to exchange data with other computers, printers, and accessories in serial format (one bit at a time). It is intended for applications that use data rates other than those handled by the Communications Interface Card (110 or 300 baud), or that involve serial printers that don't require "handshake."

The Serial Card features on-board firmware that provides BASIC control in both block-data-transfer and printer-operation modes. A number of hardware and software switches on the card serve to adapt it to a wide variety of applications, yet it remains simple to use because of its built-in intelligence.

NOTE: The Serial Interface Card will not allow you to use your Apple as an intelligent terminal. See the Communications Interface Card for this purpose.

Benefits

The Serial Interface Card...

- *expands your system's usefulness by providing an industry standard (RS-232) interface to most computer accessories...*
- *eliminates the need to write or load assembly language control programs to control high speed printers and plotters, because of its built-in intelligence...*
- *is easily controlled from BASIC or Pascal using simple commands...*
- *provides access to a variety of local and remote computer equipment because it quickly transfers large blocks of data by telephone (through a modem), or directly, at speeds from 75–19K baud...*
- *offers easy set-up through switch-selectable preset conditions for speed, line length, auto line feed, and carriage return delay.*

Technical Specifications

Parameter	Description
Signal Level:	EIA RS-232C or 20mA current loop
Data Word Format:	1 start bit, 1 or 2 stop bits, 5–8 data bits; odd, even, or no parity. Checksum is optional.
Character Handling Options:	Lower-case characters optionally converted to upper-case or passed through unmodified and displayed in inverse video.

The Serial Interface Card Package Order No. A2B0005

With your Serial Interface Card order, you will receive:

- Serial Interface Card;
- DB-25 bulkhead connector and mounting bracket;
- Instruction Manual;
- Letter-quality printer control PROM.

Communications Interface Card

The Communications Interface Card allows you to connect your Apple to modems, CRT terminals, and other devices employing a bi-directional, serial (RS-232C) interface. The card's built-in intelligence lets you control these devices easily in BASIC.

Benefits

The Communications Interface Card...

- *requires no external control software, because of its built-in intelligence...*
- *is easily controlled from BASIC or Pascal using simple commands...*

- *offers communications flexibility because it operates at 110 or 300 baud, half- or full-duplex...*
- *provides versatility in device attachment, because it is compatible with the industry-accepted, standard RS-232C Serial Interface.*

Technical Specifications

Parameter	Description
Signal Level:	EIA RS-232C
Data Word Format:	1 start bit, 1 or 2 stop bits, 7 or 8 data bits; odd, even or no parity.

The Communications Interface Card Package Order No. A2B0003

With your Communications Interface Card order, you will receive:
- Firmware in ROM;
- DB-25 bulkhead connector and mounting bracket;
- Demonstration tape;
- Communications Interface Card Operating Manual.

Parallel Printer Interface Card and Centronics Printer Interface Card

These Printer Interface Cards give you the capability to generate reports, listings, labels, and letters with your Apple computer, using a variety of parallel-interfaced printers. A special version of the card, the Centronics Interface Card, is available for use specifically with the Centronics 779 printer.

NOTE: The Centronics Interface Card does not support the Centronics 730 family of printers.

Benefits

Both the Parallel Printer Interface Card and the Centronics Interface Card...
- *allow you to generate printed material on a variety of popular printers...*
- *eliminate the need to write or load assembly language programs to control attached printers, because of built-in intelligence...*
- *allow simple printer control from BASIC or Pascal...*
- *permit format flexibility by handling print formats up to 255 characters per line...*
- *allow printer speed flexibility, because both can accommodate printing of up to 5000 characters per second (3700 LPM at 80 characters per line).*

Technical Specifications

Parameter	Description
Data and Control:	
Signals:	7–8 parallel data bits
Print Line Width:	40–255 char/line. Automatic formatting of BASIC listings.

The Parallel Printer Interface Card Package Order No. A2B0002

With your Parallel Printer Interface Card order, you will receive:
- Parallel Printer Interface Card;
- Ribbon cable with no connector on one end;
- Configuration jumper block;
- Instruction manual.

The Centronics Interface Card Order No. A2B0007

With your Centronics Interface Card order, you will receive:
- Centronics Interface Card;
- Pre-wired configuration jumper block;
- Ribbon cable with Centronics connector;
- Instruction manual.

Apple IEEE-488 Interface Card

IEEE-488 Standard For Instrument Control

Apple II/II Plus versions available fourth quarter 1980; Apple *III* version available second quarter 1981.

With the Apple IEEE-488 Interface Card installed, Apple computer systems can be used to program and operate virtually any test, measurement, or control instrument that is bus-compatible with the IEEE-488 interface standard. The interface card plugs into any expansion slot in the Apple II, Apple II Plus, or Apple III computers. Its cable comes with a standard IEEE-488 bus plug for quick connection to IEEE-488 instruments.

The IEEE-488 interface card simplifies design and implementation of complex instrument systems – including frequency generators, digital multimeters, programmable power sources, and other equipment. Powerful resident software allows you to program instrument control in BASIC and assembly language using straightforward macro commands (FORTRAN and Pascal users can access the card through assembly language routines). And there's no need to worry about signal protocol on the bus, because the card's resident software handles it all for you.

The Apple IEEE-488 Interface Card lets you take advantage of the power, reliability, and reasonable price of Apple computers, to control a wide variety of scientific/industrial instruments.

Benefits

The Apple IEEE-488 Interface Card...
- *simplifies the design of instrumentation systems, because it conforms to the industry-wide IEEE-488 standard...*
- *lets you use simple commands to operate the most complex instruments...*
- *expands your instrument control capabilities, by using fully-integrated Apple II and Apple III computer systems...*
- *provides for flexibility in system design, including the ability to plug multiple interface cards into a single Apple computer.*

System Configuration

To use the Apple IEEE-488 Interface Card, you will need:
- any Apple *III*; or
- Apple II or Apple II Plus, each with a minimum 32K of memory;
- Apple Disk II with controller;
- a video monitor.

Technical Specifications

As a Listener/Talker/Controller, the Apple IEEE-488 Interface Card provides a fully compatible subset of the IEEE-488 standard. (Its only limitation is that it cannot pass control to another IEEE-488 controller.)

The following is a list of GPIB (General Purpose Instrument Bus) commands that can be used with the Interface Card:

WRITE	Write Data Out
WRITECNT	Write Data Out With Count
READ	Read Data In
READCNT	Read Data In With Count
XFER	Transfer Data
TRIGR	Group Execute Trigger
CLRAL	Clear All Devices
CLEAR	Clear Selected Devices
REMAL	Remote Enable All
REMDV	Remote Selected Devices
LLKAL	Local Lockout All Devices
LOCAL	Local Mode All Devices
LOCDV	Local Selected Devices
SRQD	Service Requested
SPOLL	Serial Poll
PPOLL	Parallel Poll
PPENB	Parallel Poll Enable

PPDIS	Parallel Poll Disable
PPUAL	Parallel Poll Unconfigure All
DEVICE	Device Number
LINEFEED	Line Feed Off/On
EOS	End of String Character
SCREEN	Screen Control
ABORT	Abort

The Apple *III* IEEE-488 Interface Card Package Order No. A3B0015

With Your Apple *III* IEEE-488 Interface Card order, you will receive:
- Apple *III* IEEE-488 Interface Card;
- Apple *III* IEEE-488 Interface Card driver diskette;
- Card-to-instrument cable with IEEE-488 standard plug;
- Instruction manual.

The Apple II/II Plus IEEE-488 Interface Card Package Order No. A2B0015

With your Apple II/II Plus IEEE-488 Interface Card order, you will receive:
- Apple II IEEE-488 Interface Card;
- On-board, ROM-based software;
- Card-to-instrument cable with IEEE-488 standard plug;
- Instruction manual.

Apple *III* Universal Parallel Interface Card

Three Interface Cards in One

Available first quarter 1981

The Apple III Universal Parallel Interface (UPI) Card lets users attach a variety of parallel-mode printers—including most dot matrix models, plus some thermal and daisy wheel units—to Apple III computer systems. Included with the Card is a diskette containing an operating system driver, which lets you custom configure the card to work with the printer you are using.

Because the UPI Card also emulates two Apple II interface cards—the Centronics Interface Card and the Parallel Interface Card—it's able to control your printer directly from Apple III software, or from Apple II software running in emulation mode. And it spares you from having to juggle different cards for different jobs.

The Apple III UPI Card can also be used with equipment other than printers, functioning as a general-purpose, parallel input/output interface. Sixteen output lines (two groups of eight lines each) and eight input lines provide wide data paths for sending, receiving, and acknowledging data transfers. Other features of the Card's general-purpose function include: control signals with software-selectable priority; a programmable pulse-length strobe line; and software interrupt capabilities.

Because it's three cards in one, the Apple III Universal Parallel Interface Card gives you the convenience of printer plug-compatibility, the economy of Apple II printer emulation, and the flexibility of a fully-featured parallel interface.

Benefits

The Universal Parallel Interface Card...
- *increases system flexibility, by permitting control of a wide range of dot matrix, thermal, and daisy wheel printers...*
- *reduces system costs and hardware requirements, by providing complete Apple II parallel printer emulation...*
- *broadens the Apple III's capabilities, because it can also be used as a powerful, general-purpose parallel input/output port for a wide range of custom applications.*

System Configuration

To use the Universal Parallel Interface Card, you will need:
- any Apple *III* system with an available expansion slot.

Technical Specifications

Parameter	Description
Data Lines:	16 output (24 mA at 0.5V)
	8 input (1 LSTTL load)
Control Lines:	Data Ready Output
	Acknowledge Input
	Reset Data Ready
	Output Strobe
	Signal Ground
	Chassis Ground
Control Signal Polarity:	Software setable
Signal Levels:	LSTTL
Strobe Length:	1-15μ sec in 1μ sec steps
Interrupts:	Software controlled

The Apple *III* Universal Parallel Interface Card Package Order No. A3B0002

With your Apple *III* Universal Parallel Interface Card order, you will receive:
- Universal Parallel Interface Card;
- Software driver diskette;
- Instruction manual;
- Centronics-type interface cable;
- Ribbon cable connector.

Expansion Options

Growing Your Apple System

Apple Language System

This system allows Apple users to take immediate advantage of the powerful Pascal language, as well as the Integer and Applesoft BASIC interpreters. It does this by means of the Language Card, which provides 16K bytes of RAM memory that electrically replace the ROM firmware built into each Apple. Upon start-up, this RAM memory is automatically loaded from disk with the user's choice of languages, then protected from change. This technique gives both Apple II and II Plus owners access to all available languages, as well as the hardware needed to run future language processors as they appear.

Equally important, this product comes with a set of conversion PROMs that allow for a 20% increase in disk capacity, by implementing a compatible 16-sector (143K byte) disk format. (This increase is available to all Pascal users, and to BASIC users who work with the DOS 3.3 Operating System.)

For a full description of the Pascal Operating System supplied with this product, see **Apple Pascal** *in the Software section of this reference guide.*

The Apple Language System Package Order No. A2B0006

With your Apple Language System order, you will receive:

- Apple Language Card containing:
  - —16K bytes of RAM on a plug-in card;
  - —Auto-Start monitor ROM;
- Four (4) Pascal System Diskettes;
- BASICS diskette;
- Two (2) 16-sector PROMs for the Apple Disk II Controller;
- IC puller;
- Reference manuals for Pascal, Applesoft BASIC, Integer BASIC, and the Language Card.

Applesoft Firmware Card

The Applesoft Firmware Card provides access to the library of programs written in this extended BASIC language. It contains hardware and software controls that allow it to electrically replace the existing Integer BASIC firmware in Apple II computers.

A complete description of the Applesoft Language may be found in the **Software** *section of this reference guide.*

The Applesoft Firmware Card Package Order No. A2B0009

With your Applesoft Firmware Card order, you will receive:

- Applesoft Firmware Card;
- Auto-start monitor ROM;
- Applesoft II Reference Manual.

Integer Basic Firmware Card

This card provides access to a library of programs written in the Integer BASIC language.

It contains hardware and software controls that allow it to electrically replace the existing Applesoft BASIC firmware in Apple II Plus computers.

A complete description of the Integer BASIC language may be found in the **Software** *section of this reference guide.*

The Integer Basic Firmware Card Package Order No. A2B0010

With your Integer Firmware Card order, you will receive:
- Integer Firmware Card;
- BASIC Programming Manual;
- Apple II monitor ROM;
- Programmer's Aid #1 ROM;
- Programmer's Aid #1 Installation and Operation manual.

Auto-Start ROM

The Auto-Start ROM makes any Apple II friendlier and easier to use by adding such features as:
- *automatic start-up in BASIC for systems without disks;*
- *automatic disk program loading when system turns on;*
- *RESET protection (RESET key halts programs, returns to BASIC);*
- *easy screen editing, with up to 90% fewer keystrokes.*

The device is a plug-in replacement for the existing Apple II monitor ROM. It is included with Apple II Plus systems, the Applesoft Firmware Card, and the Apple Language System.

The Auto-Start ROM Package Order No. A2M0027

With your Auto-Start ROM order, you will receive:
- Auto-Start ROM;
- Auto-Start ROM Installation and Operation Manual.

16K Byte Expansion Memory Module

This module allows user memory expansion in 16K byte increments for any 16K or 32K Apple II computer.

The 16K Byte Expansion Memory Module Package Order No. A2M0016

With your Expansion Memory Module order, you will receive:
- Eight (8) 16K bit RAM devices;
- Installation instructions;
- Test program to ensure installation is correct.

Hobby/Prototyping Card

Create your own Apple interface boards with this wire-wrap card. The 2¾" x 7", double-sided circuit board includes a hole pattern (on 100-mil centers) that accepts all conventional ICs and passive components. It plugs directly into any Apple expansion connector, and fits entirely within the computer case.

The Hobby/Prototyping Card Package Order No. A2B0001

With your Hobby/Prototyping Card order, you will receive:
- Hobby/Prototyping Card;
- Complete bus documentation.

Programmer's Aid #1

Programmer's Aid #1 is a ROM-based library of routines to simplify and enhance your Integer BASIC programs. Its capabilities include:
- *high resolution graphics generation;*
- *program renumbering and linking;*
- *tape verification;*
- *musical tone generation (12 timbres and 5 octaves);*
- *RAM testing;*
- *machine language program relocation.*

Note: Programmer's Aid #1 is now included with Apple II computers and with the Integer BASIC Firmware Card.

The Programmer's Aid #1 Package Order No. A2M0019

With your order for Programmer's Aid #1, you will receive:
- 2K byte ROM;
- Programmer's Aid #1 Installation and Operating Manual.

Apple *III* OEM Prototyping Card

An Effective Aid For Custom Interface Design

Apple's OEM Prototyping Card is a convenient, modular printed circuit card on which to build custom interfaces for the Apple III Computer System. The card offers ample space to handle the majority of interface designs. It accommodates most integrated circuits and components, and has built-in facilities for attaching a variety of edge connectors and switches to your circuits. Also included are decoupling networks and shields to ensure maximum immunity from RF noise.

Equally important, the OEM Prototyping Card assures you of Apple product quality and compatibility. The card is double-sided, with plated-through holes for positive connection. And its 50-pin, gold-plated edge connector plugs right into any unused expansion slot in your Apple III, giving you complete access to all of the signals on the bus.

Even the most advanced custom interfaces for the Apple III are easier to design and more reliable to use, when you start with Apple's OEM Prototyping Card.

Benefits

The Apple *III* OEM Prototyping Card...
- *simplifies designing even the most advanced system interfaces, with its convenient, built-in RF shielding, power bus, and other features...*
- *allows greater flexibility, because it accepts a wide range and combination of components mounted in various positions...*
- *saves you time and money implementing Apple III custom interfaces, by reducing the effort required to assemble working prototypes...*
- *assures you of Apple reliability and compatibility, because of the card's high-quality printed circuits, connectors, and construction.*

System Configuration

To use the Apple *III* OEM Prototyping Card, you will need:
- any Apple *III* system with an available expansion slot.

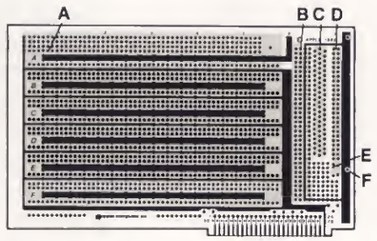
Technical Specifications

Circuit Development Area (A):
- 5.40" x 3.70" space;
- 0.10" hole spacing;
- accepts up to 42, 14-pin; 36, 16-pin; 24, 24-pin; or 12, 40-pin DIP packages; or combinations thereof.

Input Buffering Area (B):
- Two 8-line RC decoupling networks;
- 1-MHz RF rolloff.

Connector Interface Areas:
- Area **C**: for up to 67-pin, "D"-type connectors;
- Area **D**: for up to 50-pin, ribbon cable connectors.

Additional Board Areas:
- SPST switch position (**E**);
- RF Shield (supplied) connection points (**F**);
- 50-pin, gold-plated edge connector.



The Apple *III* OEM Prototyping Card Package Order No. A3B0001

With your Apple *III* OEM Prototyping Card order, you will receive:
- OEM Prototyping Card;
- Two 8-line RC networks for RF isolation;
- One RF Shield;
- Four power supply decoupling capacitors;
- Instruction manual (includes Apple *III* Bus technical description).

Expansion Options Addendum

Many companies offer both hardware and software products compatible with Apple Computer Systems. The products listed below are manufactured by others, but may be ordered from Apple through Apple Authorized Dealers.

Modem IIB

Modem IIB is a communications package that extends the power of your Apple by allowing it to tap the resources of timesharing services, computerized bulletin boards or your office computer from the comfort of your own home. It allows you to transfer programs to a friend's Apple over the telephone network. It even permits you to control an Apple in San Francisco from another computer in New York. And, with programs like Apple's Portfolio Evaluator, it makes your Apple an intelligent terminal, able to request and process information from large remote data bases.

The coupler is a 103A-type, asynchronous device, suitable for data communications at 110 or 300 baud (10 or 30 char/sec). It operates in either the Originate or Answer modes. Connection to the phone system is accomplished by placing the telephone handset in position on top of the modem. No permanent connection or wiring changes are required.

The Modem IIB Package Order No. A2M0017-U.S. A2M0017P-European

With your Modem IIB order, you will receive:
- Acoustic coupler (modem);
- Apple Communications Interface Card (optional);
- Demonstration Tape;
- Connecting cable;
- Documentation.

Printer IIA (Centronics 779)

Printer IIA is a medium-speed impact printer for home and business applications requiring low cost, multi-copy printing. It prints 80 to 132 (5x7) dot-matrix characters per line, at 60 characters per second. It is capable of reproducing the 64-character, upper-case ASCII set, and its tractor paper feed allows printing of five-part forms in widths to 9.8". The mechanism is packaged in a low-profile, desk-top cabinet.

The Printer IIA Package Order No. A2M0011

With your Printer IIA order, you will receive:
- Printer IIA;
- Apple Centronics Printer Interface Card;
- Cable and connector;
- Operating documentation;
- Warranty.

Clock/Calendar Card (Mountain Computer)

This plug-in card provides a 388-day calendar and clock, with resolution to 1/1000 second. A built-in, rechargeable battery keeps the clock on time up to four days without system power, and external batteries may be used for longer periods. Optional interrupt capability simplifies control applications.

The Clock/Calendar Card Package Order No. A2M0024

With your Clock/Calendar Card order, you will receive:
- Clock/Calendar Card;
- Rechargeable battery;
- Operating instructions.

The Apple One-Year Extended Warranty

Low Cost Protection for Your Apple

The Apple Extended Warranty is an insurance policy for your Apple. It covers all Apple-manufactured hardware and system software for one full year.

Benefits

The Apple Extended Warranty...
- *assures you of continuing product excellence, because any corrective update to Apple System software is yours free*...*
- *grows with your system, because all Apple-manufactured products, including those you buy during the one-year period, are automatically covered...*
- *offers you the lowest cost protection in the industry, less than ¾% per month of a typical system's price.*

The Apple Extended Warranty— A Closer Look

Apple has become a leader in the personal computer industry by providing the best products available on the market—and keeping them the best by finding ways to improve them. When you're part of the Apple Extended Warranty Program, any corrective update to Apple System software is yours—free. System software includes Integer BASIC, Applesoft BASIC, DOS, Apple Pascal, and more.

Because there are more than 500 Apple Authorized Service Centers, there's probably one located near you. Apple guarantees that your Extended Warranty will be honored at all of its service centers—added insurance should you move to a new area. Local service means you won't have to wait extra days while your Apple is shipped to and from a repair center.

If you purchase additional Apple products during the one-year Extended Warranty period, they are automatically covered. You don't have to buy more coverage or another warranty. And your Apple Extended Warranty is renewable in one-year increments. Although the price in future years can't be guaranteed, you're assured of the same outstanding coverage—and benefits—that you enjoyed the first year.

Although Apple recommends—for your maximum protection—that you buy your Extended Warranty with your system, Apple gives you the option to do so at any time. However, should your Apple be out of its initial 90-day warranty period, you'll need to take it to your local Apple service dealer for an owner-paid inspection before you can purchase the Extended Warranty.

The Apple Extended Warranty Package Order No. A2G0003

With your Apple Extended Warranty order, you'll receive an attractive folder, designed for easy, convenient storage. Inside, you'll find:
- a booklet explaining how you can take full advantage of Apple's warranty and service programs;
- a document containing all terms and conditions of the warranty;
- a warranty agreement in triplicate—one copy for you, one for your local Apple service dealer, and one for Apple's worldwide headquarters;
- warranty validation labels to identify your warranty and prevent others from using it.

*Note: When system software updates include significant product enhancements, a nominal fee will be charged.

Ask the Expert—Your Local Apple Dealer

Apple has a worldwide network of more than 1,000 dealers and service centers. There's probably one located near you. Your local dealer understands your needs and is in the best position to address them individually.

Visit your dealer for a demonstration of the Apple Personal Computer System. Talk to him about what you want your system to do for you. Then tell him you want to put an Apple to work. He'll do the rest.

Notes: